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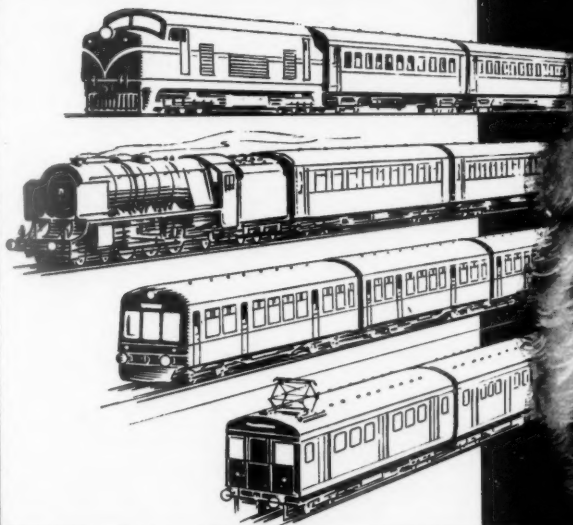
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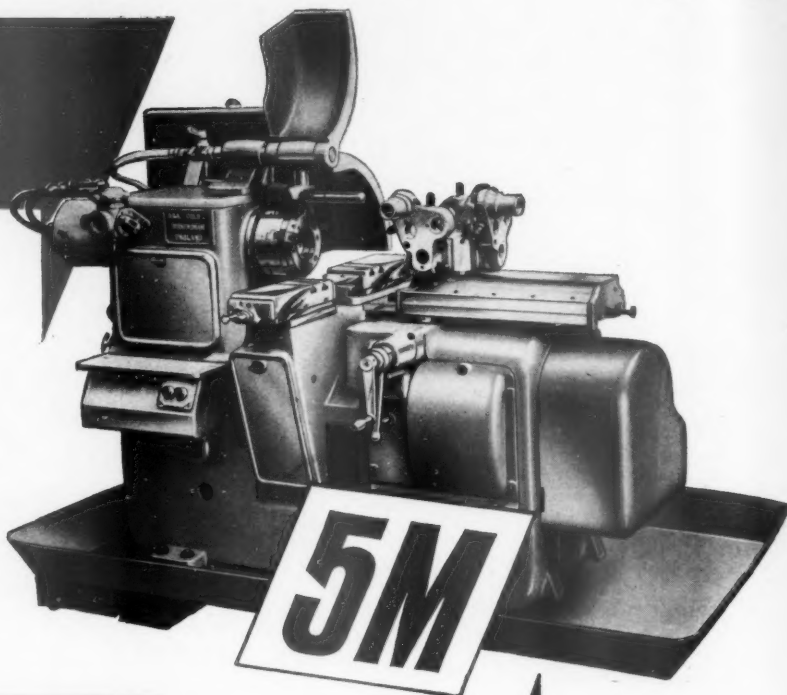
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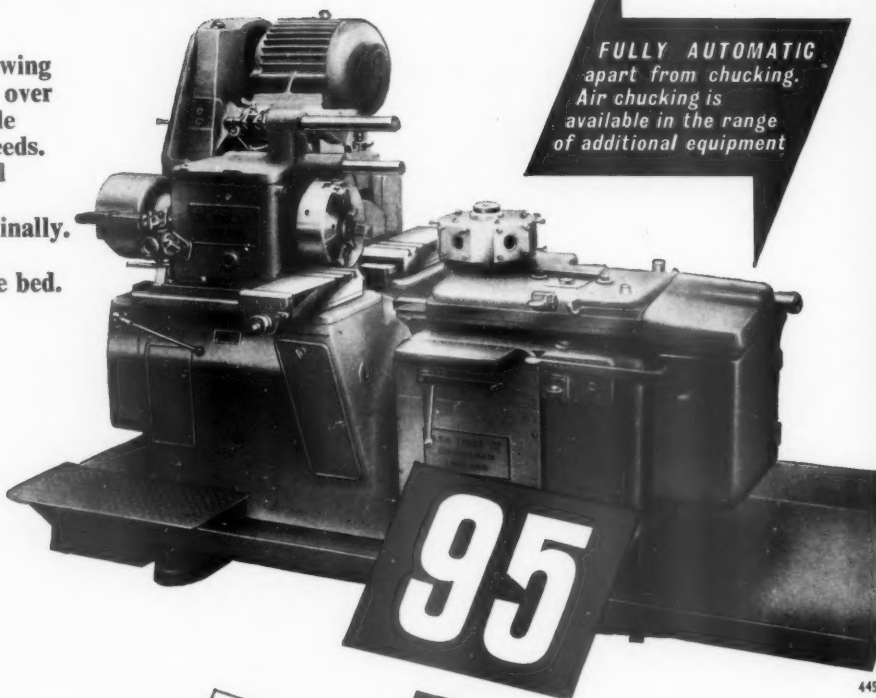
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Decline in Steel Traffic

THE demand for steel is rightly regarded as a barometer of industrial activity, and the decline by 5 per cent in steel output for the first half of this year, compared with 1957, is ominous. Last month, production averaged 373,600 tons a week—nearly 9 per cent less than in June of last year. Domestic consumption has been falling for some time, partly because of a reduction in building activity; receipts have diminished; and the demand for scrap has declined considerably. This is reflected in the mineral traffics of British Railways, which for the four-week period ended June 15 were 16 per cent below those for the same period of 1957—despite increases in charges in the meantime; for the preceding four weeks they were 11 per cent below last year's figure, which represents a decline of 16.5 per cent in mineral tonnage conveyed by all Regions; for the period ended April 20 there was a fall in tonnage of 11.7 per cent, much as for the first few weeks of the current year. Minerals, which last year contributed some £53.5 million to British Railways' total freight receipts of £288.5 million, is one of the most efficiently handled traffics. Many new

mineral wagons have been placed in service and steps taken to improve wagon user by working block trains. The decline in mineral movement offering is certainly not due to any lack of vigour on the part of the railways. The traffic simply is not there, as is borne out by the steel production figures. The same consideration appears to apply also to merchandise, though to a lesser degree. The decline in this traffic over the past few months is certainly the result of a shrinkage in the potential of goods to be moved, though it would be premature to say that everything possible is being done by traffic staffs at all levels to secure for the railways their proper share of what can be moved. Such slumps in traffic, when they are, largely, not the fault of the railway staff concerned, are discouraging. Steel traffic, unless there is a serious decline in general industrial activity and in export demands, seems unlikely to shrink further; indeed the steel industry has confidence in the future and has not altered its plans for expansion. With merchandise, railwaymen can only persevere in their efforts to capture traffic and to improve the service.

Cuts in the Second Indian Five-Year Plan

SHORTAGE of foreign exchange is causing the Republic of India to curtail the Second Five-Year Plan, 1956-61. The railways are not exempt, although they have been given high priority as a principal means of economic development. During the remainder of the five-year period, it is estimated that exchange expenditure will be reduced by Rs. 30-40 crores (£22.5—30 million) through postponement of five specifically railway projects which form part of the plan. These are: (a) electrification in the Sealdah (Calcutta) Division of the Eastern Railway; (b) electrification from Tambaram to Villupuram, Southern Railway; (c) the metre-gauge coach factory planned at Benares; (d) the furnishing unit of the (broad-gauge) Integral Coach Factory at Perambur (Madras); and the new line between Guna and Ujjain. Of the electrification schemes, both at 25 kV., 50 cycles, that for the Sealdah Division (lines in the Calcutta area which before Partition were part of the Eastern Bengal Railway broad-gauge system) is less important than conversion schemes, which are to proceed as planned, for the Eastern and South Eastern Railway broad-gauge lines on the other side of the Hooghly and in Bihar; these are urgently needed for steel and coal movement.

Electrification Still a Relative Luxury

THE Sealdah Division is mainly concerned with heavy passenger suburban traffic in and out of Sealdah terminus, though electrification will certainly help traffic to and from the docks on the left bank of the Hooghly. Traffic has long been worked efficiently by steam—which is why electrification, considered many years ago, has not hitherto been thought justifiable. Extension of electric traction southwards from Tambaram, terminus of the Madras suburban service, over the metre-gauge single line of the Southern (former South Indian) Railway to Villupuram is something of a luxury, for it is doubtful whether traffic, also long worked efficiently by steam, is yet sufficient to justify conversion. Presumably these cuts in electrification plans are affecting the French and other firms involved, though apparently preliminary work has been confined to the Sealdah Division. In addition a scheme for a new marshalling yard for the Port of Calcutta may have to be retarded.

Amalgamation in Argentina

ONE of the first measures to be taken by the newly appointed Ministry of Public Works & Services in Argentina is the amalgamation, to all intents and purposes, of the San Martín and Sarmiento Railways, in much the same manner as was done some years ago with the Buenos Aires Great Southern and Buenos Aires Western Railways. Apart from unification of the managements, which has already begun with the appointment of Eng. Carlos A. Luppi as Administrator of both, changes in working will be made as soon as possible. International and main-line

trains of the San Martín will use the new Once terminal of the Sarmiento Railway, leaving San Martín metals at Mercedes, whence they will use those of the Sarmiento Railway. A new goods yard is planned at Mercedes, and the existing ones at Caballito and neighbouring stations closed. The Retiro terminus of the San Martín Railway will be closed and suburban trains transferred to the Retiro station of the General Mitre; this will necessitate completion of the latter terminus by addition of four platforms which figured in the original plan. The single-line connection between the San Martín and Mitre Railways at Palermo Chico will have to be doubled. The Mitre yards at Retiro and Colegiales are to be closed and traffic transferred to the San Martín yards.

Overseas Railway Traffic

CANADIAN PACIFIC RAILWAY revenues for May, 1958 were \$40,036,535 (against \$44,844,994 for May, 1957) and railway expenses \$36,440,088 (\$40,182,318), so that net earnings were \$3,596,447 (\$4,662,676). Aggregate net earnings from January 1, were \$12,297,492 (\$10,211,186). Operating revenues of the Canadian National Railways for the same month amounted to \$63,102,000. Expenses, taxes, and rents totalled \$62,408,000 resulting in a net operating income for the month of \$694,000. In May, 1957 operating revenues were \$66,815,000; expenses, taxes, and rents were \$63,750,000 and net operating income was \$3,065,000. The aggregate net operating income to May 31, showed a deficiency of \$18,327,000 compared with a profit of \$10,795,000 in the corresponding period of 1957. Net railway earnings of the West of India Portuguese Guaranteed Railway Co. Ltd. for the 10-day period ending June 20, 1958 were Rs. 67,031 compared with Rs. 85,012 in the corresponding period of 1957, a decrease of Rs. 17,931. Aggregate earnings to June 20, from the commencement of the year were Rs. 986,322 (Rs. 1,017,209). Figures received from the Midland Railway Company of Western Australia Limited show that estimated road and railway receipts for April were £A71,917 (against £A74,556 for April, 1957).

Jugoslav Resilience

BEFORE the war of 1939-45 the Yugoslav State Railways system had a route-mileage of just over 6,200 miles, but during that conflict it was, in many respects, almost wiped out. In fact, it probably suffered more severely than any other system. Between them the Germans, the National Army of Liberation, the Partisan units and the Allied air forces were responsible for destroying over 50 per cent of the track, 61 per cent of the major and 55 per cent of the minor bridges, 80 per cent of the locomotives and 90 per cent of the rolling stock. With remarkable speed, however, the damage was repaired provisionally within two years, and by 1954 restoration of the whole except minor bridges was virtually complete. What rehabilitation then remained may now be considered to have been finished. Moreover, besides large sumsspent on reconstruction, others have been invested in building 850 miles of new line, the route-mileage now totalling over 7,200 miles, of which 5,400 miles are of standard gauge. Electrification of 107 miles has also been undertaken. In all these works the only foreign aid forthcoming was in the supply by U.N.R.R.A. of 300 out of 500 locomotives purchased since the war; 15,000 wagons have also been acquired. A £200,000,000 modernisation plan is also now being considered. It includes the provision of 600 coaches, 12,000 wagons, electrification, and diesel traction, and the reconstruction of some 1,500 miles of track.

Publicity for Motive Power

PICTORIAL publicity by railways in many countries has long suggested that certain trains are hauled normally by specific types of motive power—usually recent additions to the fleet. It is very seldom that a train is stated categorically to be headed by a certain class. This is the case with a display by British Rail-

ways, Eastern Region, at Clacton, illustrated elsewhere in this issue. The attractiveness of that resort as a place of residence is enhanced by the journeys to and from Liverpool Street by the frequent fast trains hauled by "Britannia" class 4-6-2 locomotives, as depicted and stated in words. There is a good reason for this, apart from the pleasing appearance of the Class "7" engines, for their power facilitates punctuality on difficult schedules. One may wonder now why publicity of this sort was not seen before: we cannot recollect, for example, any specific reference to the Southern Railway "Schools" class 4-4-0s which in their heyday worked business trains on the Hastings and Folkestone lines. Perhaps mention can be made of classes of diesel and, later on, electric locomotives on residential services.

Further Electrification in Northern France

THE speed at which the French National Railways are electrifying lines in their Northern Region is not perhaps as great as might have been expected after the rapid conversion, in the earlier stages, between Valenciennes and Thionville. The slowing down seems to be the result of financial restrictions, not of any technical inability. Steady progress is being made on the Paris to Lille main line and on various lines in the northern coalfield. Electrification was inaugurated in March from Longueau, near Amiens, to Douai, and from Ostricourt to Lille in May. At the beginning of last month the important section of 12 miles between Arras and Lens, carrying a heavy coal traffic, was converted; later in June, electric working began of another short stretch, basically a coal line, from Lens to Pont-à-Vendin. Of the Paris-Lille line and its major branch from Arras to Béthune, there remain for conversion the sections from Paris to Longueau and from Lens to Béthune, also a few miles near Lille. It is not intended to extend electrification west or north of Lille or Béthune respectively, as coal traffic does not require this. When the scheme is complete, however, some boat trains to and from Calais may be routed via Béthune, and electrically hauled south of that point.

Quicker and Better Booking Office Working

MECHANISATION of passenger ticket issue is a field in which British Railways are only beginning to exploit the possibilities. That at Cardiff General is the largest of its kind on British Railways. What has been achieved at two busy Cardiff stations is shown in illustrations on page 81, which depict types of issuing machine. Besides these, ancillary equipment in the Cardiff General booking office facilitates change giving; weighs notes and coins to expedite checking of remittances, cash, wages and so on; and counts coins, more particularly coppers from toilets and platform ticket machines. Several points emerge. First, the very large amount of time saved facilitates economy in manpower by relieving staff of accountancy procedure, with freedom to deal with customers' needs and enquiries. Second, rapid issue minimises ticket queues at peak periods. Third, most of the daily and monthly accountancy and statistical work is done mechanically whilst keeping an adequate check on passenger revenue. Analysis of the allocation of the machines and bookings at Cardiff General shows sectionalised booking to be the most efficient, and ticket issues and machines have been divided accordingly. It is encouraging to hear that the staff has proved adaptable and enthusiastic over these changes.

Fully Mechanised Railheads

MUCH has been and is being done by British Railways to save wage costs at goods depots by installing mechanised handling equipment for merchandise and by mechanising traders' accounts, as is being done extensively in the Western Region. Mechanisation is being extended to coal traffic. The Chairman of the British Transport Commission, Sir Brian Robertson, last Tuesday opened the

fully mechanised coal depot at Palace Gates, Wood Green, of Charrington Gardner Locket & Co. Ltd., described on page 72. The depot, which deals with domestic coal, is operated by that firm and the equipment was designed by Charrold Limited, its subsidiary; British Railways were consulted throughout, and railway traffic implications were a major consideration. The depot is now clearing weekly three trains of 18 21-ton hopper wagons, loaded to an average of 18 tons each, or 1,000-1,200 tons a week. Its theoretical capacity is 1,000 tons a day. The installation is operated by only three men, of whom one is on the siding, supervising discharge from wagons. Present working is with two trains shuttling from and to the Eastern Midlands, with a few isolated wagons from South Wales. The hopper wagons are not at present vacuum fitted, but quicker turnround, through quicker transits, will be possible when eventually they are. The advantages in wagon user and elimination of shunting are obvious. The depot is of particular interest because its principles can be applied to ore and similar traffics especially if friable.

Automation in Mechanical Coach Washing

AUTOMATION will be applied to many processes now carried on or controlled to a greater or lesser extent by hand. Although mechanical coach washing plants have been on British and other railways for some years it has been usual to start and stop the cleaning apparatus manually. With the new mechanical washing plant recently built at the St. Leonards West Marina maintenance depot for the Southern Region London-Hastings diesel trains, advantage has been taken to provide means for the automatic operation of the plant, by the passage of the train being cleaned. The electronic control system depends on a high-frequency track circuit which detects the passage of trains and by means of a relay sets the washer in operation. A second train circuit switches the washer off after the train has passed. The high-frequency track circuit does not in its present form replace the orthodox track circuit for a number of reasons. It may, however, be used later to replace treadles. The washing plant, although basically similar to those which have been installed in the Region and its predecessor, the Southern Railway, since the 1930s, incorporates other special features, including a new filter and flushing system which is simple to maintain and makes possible complete recovery of the water used.

Swindon-Built Type "4" Diesel

THE demonstration run and naming ceremony of the first of 33 2,200-h.p. diesel-hydraulic locomotives, built by British Railways' Swindon Locomotive Works for service in the Western Region, took place last Monday, as recorded elsewhere in this issue. Besides being the first main-line diesel locomotive with the hydraulic form of transmission to be completed by British Railways, this design is notable as being the lightest diesel of its power category to be placed in service in this country. This shows clearly the weight-saving possibilities of the combination of light-weight quick-running diesel engines and hydraulic transmission equipment, particularly when coupled with an integral method of body and underframe construction. The all-up weight of some 78½ tons is 30-40 per cent lighter than conventional diesel-electric locomotives of the same power. Credit for the basic concept of the integral construction must go to Krauss Maffei A.G., the German firm on whose V.200 design for the German Federal Railway the new British Railways locomotives are based. At the same time, variations because of differences in loading gauge, maximum permitted axleloads and so on, have necessitated considerable re-design, and the mastering of new techniques, more particularly in welding thin steel sheet, at Swindon. The types of Maybach engines and Mekydro transmissions fitted to the locomotive, are giving good service elsewhere and it will be surprising, at least on this score, if these new Western Region diesels do not acquit themselves satisfactorily in service.

Mr. O. V. S. Bulleid

MANY outstanding contributions to locomotive design have resulted from the long and distinguished career of Mr. O. V. S. Bulleid, one of the last notable locomotive engineers of the steam era. Mr. Bulleid, who has retired as Chief Engineer, Coras Iompair Éireann, was previously Chief Mechanical Engineer of the Southern Region of British Railways. In that capacity his originality and unorthodox approach to locomotive problems brought about a mechanical revolution on that system. This process was continued in Ireland.

He joined the former Great Northern Railway in 1901 as a premium apprentice at Doncaster, and was assistant to the late Sir Nigel Gresley from 1923 until, in 1937, he succeeded the late Mr. R. E. L. Maunsell as Chief Mechanical Engineer of the Southern Railway. At that time the low availability of the steam locomotive was being thrown into relief by the advent of diesel power. Mr. Bulleid concentrated on offsetting this factor, and his first major departure from orthodox British practice was his introduction of a welded steel firebox and thermic syphons on the "Merchant Navy" class locomotives. This was followed by his design of the all-welded boiler of the "Leader" class engines. There Mr. Bulleid dispensed with the firebox in its traditional form. To facilitate welded steel construction it was necessary to introduce many changes in boiler-shop practice. Notable among these was the use of the X-ray technique in examination of welds. Loss of working time required for boiler washing-out was reduced by successful water treatment. This minimised priming troubles and corrosion.

A second development was the inside crank and connecting rod motion of "Merchant Navy" class locomotives. Mr. Bulleid set out to produce an enclosed engine, in which the moving parts could be lubricated continuously by flood lubrication, and at the same time protected from dust and grit. In these locomotives the inside crank, connecting rod, and three sets of valve gear were totally enclosed in a casing located between the main frames. A subsequent development, incorporated in the "Leader" class locomotive, was the use of two totally-enclosed three-cylinder sleeve-valve engine units. Other component parts designed by Mr. Bulleid included the "B.F.B." wheel. This resulted from careful research on stress distribution. The use of "circlips" for locating motion pins, and so forth, in place of the usual taper or split pins and washers constituted another innovation.

When he retired as C.M.E. of the Southern in September, 1949, to become Consulting Mechanical Engineer and, later, C.M.E. of Coras Iompair Éireann, Mr. Bulleid brought his new approach to bear on Irish problems. The subsequent revitalisation of the locomotive and rolling stock position on C.I.E. owes much to the exercise of his customary initiative and vigour. He was responsible for expediting the changeover, in one stage, from steam to diesel traction. A number of diesel-electric locomotives was purchased from British manufacturers. These included 94 from the Metropolitan-Vickers Electrical Co. Ltd. fitted with Crossley engines, and 12 from the Birmingham Railway Carriage & Wagon Co. Ltd. with Sulzer engines. In addition, 19 diesel locomotives were designed and built at Inchicore, equipped with Maybach high-speed diesel engines and hydraulic transmissions. Mr. Bulleid was responsible for the layout at that works of a new three-level diesel inspection and servicing centre which deals with the whole diesel fleet. He introduced lightweight passenger coaches and goods wagons of a new design. The coach bodies are of Mallinson laminated wood and have triangular underframes on cast steel bogies. The new wagon stock is also noted for its light tare weight. He also was responsible for the prototype peat-burning steam locomotive recently introduced on the C.I.E. Peat is the only natural fuel available in quantity in Éire, but, due to Mr. Bulleid's foresight, the locomotive is readily convertible to crude-oil firing. There has been a notable extension of all forms of welding, as might be expected under a Chief Mechanical Engineer who is a Past President of the Institute of Weld-

ing. Other experimental work included non-destructive testing of materials, and self-contained diesel generator sets for carriage heating.

Mr. Bulleid's adventuresome, but always reasoned, guidance as Chief Mechanical Engineer will be a loss to Coras Iompair Eireann. His work over almost 60 years has greatly influenced the recent development of steam traction. An accurate assessment of the value of his work cannot easily be made in view of the gradual extinction of steam traction. In matters of this kind, time is the final arbiter. It may be that insufficient years lie ahead of the steam locomotive as a practical proposition for Mr. Bulleid's achievements fully to be appreciated.

Railway Realism

IN an atmosphere largely political the annual general meeting of the National Union of Railwaymen, in session at Exmouth, Devon, have been considering how best to improve the railway situation. In his speech on July 7, Mr. C. W. Evans, President of the N.U.R., stressed the necessity of planning in the overall transport field. Modernisation must be so speeded up that the railways can fit both efficiently and economically in a co-ordinated transport system. Although a sufficient revenue must be produced to cover interest charges and other obligations, too heavy a burden must not be placed on the undertaking. Such a situation is demanded by national requirements and must precede the very existence of the railwaymen themselves.

Speaking on the same day, Mr. S. F. Greene, General Secretary of the N.U.R., also maintained that efficient services are a necessary adjunct to the continuing existence of the railwayman. No one, he stated, is going to run railways just to employ railwaymen. They are going to be run to provide a service to carry passengers and freight. Mr. Greene was speaking to a resolution passed by the rank and file members. It referred to Government curtailment of finance necessary to implement the modernisation plan and declared that capital expenditure was an urgent and vital necessity. Mr. Greene claimed that the resolution, which was carried with acclamation, pointed to the existence of a sense of urgency now possessed by most of the rank and file, a fact extremely important to public and union. Discussing possible avenues of improvement, he referred to the problem of closing branch lines and to the Midland & Great Northern in particular. This closure would affect 1,500 staff. The union accepted the fact that, when the modernisation plan was fulfilled, many fewer people would be working in the industry than was the case at present. He referred to an observation made by Sir Brian Robertson, Chairman of the British Transport Commission, regarding newspaper statements to the effect that the union had accepted the recent wage offer on the understanding that there would be wholesale redundancy on the railways. The Chairman had added that "as good employers we have not lost our sense of responsibility to our staff." Mr. Greene asserted that there was no question of the last wage settlement being tied up with redundancy. On this point we need comment only that, as stated editorially in our June 6 issue, the wage settlement was made and accepted on the basis that the money to meet it would be found from economies within the industry. It is difficult to see how savings on a sufficiently large scale can be achieved without redundancy.

Mr. Greene next reviewed possible means of assisting the railways to pay their way. He pointed out that the closing of unremunerative sections is not confined to the railway industry. He cited the closure of over 500 gas-works since nationalisation and claimed that the good relations existing between management and unions in the gas industry had facilitated sympathetic and equitable treatment of the problems of redundancy involved by these closures. It is reasonable to suppose that similar restraint and goodwill, such as that shown during the recent pay settlement, would be exercised between the B.T.C. and the railway unions.

A further point made by Mr. Greene showed that he is in agreement with the view known to be held by Sir Brian Robertson, that the efficient application of the modernisation plan may well result in a smaller, more closely-knit industry, more productive both in revenue and in its ability to pay its men. Looking ahead, said Mr. Greene, he would like to see half as many staff properly paid rather than twice as many badly paid. This was a bold statement at a mass union meeting. The absence of an adverse reception would seem to underline the existence of a new sense of responsibility possessed by railwaymen toward their industry. In recent issues we have noted the signs of such an attitude among N.U.R. leaders. Mr. Greene claims that it exists also among the rank and file. He concluded his speech by observing that railwaymen want a modern industry and that they do not want to stand in the way of new methods and progress. It was the job of the men to accept them and to get as much out of them as they could. This is good to hear, for the measure of railway progress must depend on the co-operation achieved between Commission and unions. The greater this factor of unity in regard to the adoption of new methods the sooner will be the attainment of a situation equally satisfactory to all three parties directly concerned—public and traders, Commission, and the railwaymen themselves.

East African Problems

SURPLUS movement capacity, the consequent insufficient return on capital, and a rise in recurring expenditure are among the matters causing concern to the management of East African Railways & Harbours. These problems are clearly outlined in the address given last week by the General Manager, Mr. J. R. Farquharson, to the Chamber of Commerce at Kisumu, in the Nyanza Province of Kenya, on Lake Victoria—where transport users have ample opportunities of judging both railway and lake steamer services. As to maintenance of its plant and equipment, he points out, E.A.R. & H. is now in a reasonably satisfactory position. There are a few sections of the system where the track is in a relatively poor state, but these are now being relaid as quickly as possible with the resources available. Similarly, equipment and facilities generally are in good condition and, with a few exceptions, are more than adequate to meet current needs. The problem of maintaining the property in sound condition, however, is serious: the present-day value of wasting assets is now about £140 million. It is estimated that the railway services could move efficiently about 20 per cent more traffic than is offering at present. A very great increase in economic activity in the three East African territories would be necessary to produce this traffic, unless the railways increase their share of total carryings.

The biggest problems relate to maintaining the finances in a sound condition. Since the war the administration has spent or committed the whole of the £64½ million authorised for development and re-equipment. As a result capital overheads have risen tremendously. For example, in 1948-50 annual loan charges were between £800,000 and £900,000, but in 1957 they were almost £3,250,000, and this figure will increase, for not all the £64½ million has yet been raised in the form of long-term loans. The margin of excess capacity means that plant and equipment are earning less than was hoped for when it was decided to embark on the development. Recurring expenditure shows a tendency to rise, mainly because of increased staff costs, which form about one-half of that expenditure—a significant fact in relation to a railway in tropical African territory.

These factors, and loss of some of the more valuable traffic to competing forms of transport, have made the budgetary position very difficult. For 1957 there was a deficit of over £280,000 in the year's working. Rates were increased from October 1, 1957. This change has caused some slight improvement in the position during the first few months of this year; but despite the increase in rates, current revenues are barely up to those ruling in

1957. Mr. Farquharson doubts whether revenues will significantly exceed costs during 1958. Besides this, a committee has reported that the contributions to the Renewals Fund are inadequate. This position, he observes, could be corrected quickly by an early and significant increase in traffic; but there is no indication that in the immediate future revenues will rise. Since 1955, the physical volume of goods moved has been practically unchanged.

It may be consolation that in the last 30 years the longest period without an increase of traffic was 1930-35, the years of the depression. If the recession proves no more severe than the earlier one, perhaps E.A.R. & H. can look forward to expanding traffic from 1960 onwards. By then the effects of recent capital expenditure within the three territories of Kenya, Uganda, and Tanganyika and improved methods of production will have again insured the steady increase in agricultural, mining and industrial production that has been a feature of the East African economy during the last 50 years.

Road competition is a major problem. There has been general agreement in the past that the existing differential tariff should be retained so that the lowest possible rates are quoted for agricultural and other products. This has the disadvantage that much of the traffic offering is susceptible to competition by road, though the average charge by the railway of 20 cents a ton-mile is well below the cost which can be achieved by road transport, even when the latter operates under very favourable conditions. The Kenya Government has operated a licensing system for many years; the Tanganyika Government has recently introduced one; and in Uganda there is no licensing for freight vehicles. If the differential tariff is to be maintained in its present form, Mr. Farquharson believes, the Governments will have to give greater attention to the enforcement of existing legislation. The railway management will do all in its power to carry all traffic that can be moved most cheaply by rail. Where existing legislation cannot protect railway services, rates must be reduced to bring them closer to the average, though this in the end will mean raising some lower rates. "No road operator," he warns, "should lightly enter into competition with the rail services."

To meet immediate traffic needs, he explains, there is no case for any great capital expenditure. Reference to our issues over the past 10 years will show how great is the amount of motive power, rolling stock, and other equipment procured during that period. The management is certain that traffic will increase again. To meet changing needs, it is necessary to adjust, improve, and extend the facilities so that they may be ready for demands to be made on them. It is intended, therefore, to use the limited available capital resources to adapt and extend facilities where the net revenue position can be improved and where developments are needed to meet expected long-term demands. One of the most promising projects recently recommended for approval is the Bukente-Jinja cut-off in Uganda, the subject of editorial comment last week. At Mombasa, despite declining port traffic, work is continuing on the four new deep-water berths at Kipevu.

Although the volume of traffic carried on railway services has been virtually unchanged for the last two years, traffic on Lake Victoria has continued to increase. Action has already been taken to increase the capacity of the lake fleet by building further vessels and the transfer of lighters from the coast ports. With lake passenger traffic, where there are deficiencies, particularly in travelling conditions for third class passengers, it is stated to be hard to make any radical improvements until the new passenger ship on order is delivered in 1960. As to railway services affecting Nyanza Province, the General Manager points out that on the Nakuru-Kisumu section improved track has resulted in smoother running and will enable heavier engines and trains to be operated.

One of the most important problems facing the management of E.A.R. & H. at present is the increasing demand by organised labour for higher pay. The recent

dispute with the African trades unions in the three territories finally went to arbitration. In effect the arbitrator stated that no award would be given to any staff, but that the subordinate staff could have 5 per cent increase if they were willing to give up some leave. The staff were unwilling to accept this condition and no change has, therefore, been made in the wage level. Mr. Farquharson, in his address, pays tribute to "the responsible attitude and good sense" of the leaders of the staff associations and unions during this period. It would be interesting to know how the conduct of railway unions elsewhere in Africa compares with this. On the other hand, in 1957, for 200 places in the Railway Training School, 15,000 applications were received. Evidently railway service is attractive.

He states bluntly, however, that on East African Railways, with a precariously balanced budget and a difficult competitive situation, there is no possibility of raising wages until there is an increase of productivity. The administration is doing all it can by better organisation and better equipment. It has been possible on the railway services to raise the *per capita* output of freight traffic from 20,000 ton-miles in 1938 to 32,000 in 1957. It is hoped that this rate of progress can be accelerated. Increased productivity is required also for capital equipment to raise average output still further; another part should go to railway users in the form of reduced rates. The co-operation of the staff is needed to raise productivity, partly by looking afresh at long-established methods of undertaking specific duties.

The American Railway Crisis

(By a correspondent)

NOT long ago American steel makers were contemplating the possibility of doubling their output by 1962. Today any increase in production above half the capacity of the steel plants is hailed as a sign that the general economic recession, which began in 1957, in abating. In a short space of time an exuberant outlook has given way to a fit of doldrums. The demand for supplies of iron ore is flagging. Movements from Lake Superior ports, which usually begin with first open water in April, did not start this year until the middle of May. On April 1 stocks of iron ore were 20 million tons, or 65 per cent, larger than a year ago and consumption in the first quarter of the year was lower by 12 million tons, or 36 per cent.

The vagaries of the coal mining industry are just as remarkable. Over 18 weeks to May 3 output dropped by 42.3 million tons, or 24 per cent, compared with the same period of 1957. About the same date coal tonnage dumped at Lake Erie ports was 4.8 million tons under last year's movement—a fall of 60 per cent. Overseas shipments of coal were equally unstable. In 1957 they set up an all-time record of 60.5 million tons, an advance of 9.4 million tons, or 18.5 per cent, on 1956. In the first four months of 1958 shipments were down 6.4 million tons, or 31 per cent.

These figures exemplify the abrupt fluctuations in transport requirements, which occur in the United States with a sharp impact on the fortunes of the railroads. In a recent address to Purchasing and Stores officers at Chicago, Mr. Daniel P. Loomis, President, Association of American Railroads, said that, when economic activity fell off, railroad traffic went spinning downward at a more rapid rate than business generally. These wide swings in railway ton miles had a disturbing effect throughout the economy. As a case in point, the railways employed 829,000 people in April—16 per cent fewer than in last spring—in an effort to bring expenditure into line with dwindling revenues; by the end of April 142,000 railway men registered for unemployment benefit. As another step towards making ends meet, the railways curtailed new works programmes by 40 per cent, or thereabouts. The resultant decrease in orders for materials and equipment reduced by a fifth the number of workpeople employed by railway supply firms.

Mr. Loomis concluded that, if the railroads are in trouble, the whole country is in a pickle, but he sees "daylight

ahead" because a bill now before the Senate contains proposals for relieving the financial strain on the railroad industry and giving it a chance to compete on equal terms with other carriers. Legislation procedure at Washington is apt to be slow and uncertain; so there is more solid ground for hopefulness in the prospect of an exceptionally large winter wheat crop this year. Arrangements for handling the extra flow of grain will have been planned early in June, at no small expense for building up an ample wagon supply, but a wagon-load of wheat may earn gross revenue of \$350 on an average. Until May the volume of other grain loadings held up better than the forwardings of other commodities, being 4 per cent ahead of 1956—a better year than 1957 in most respects.

The freakish American weather has been more violent than usual in several States this year. In February, the Pennsylvania Railroad lost \$8 million as a result of a severe snowstorm, at the very time when it was struggling to avoid an operating deficit. In winter and early spring adverse weather damaged fruit and vegetable crops so badly that refrigerator loadings were below 10,000 a week, 13 per cent under last year's forwardings. In May despatches from Florida, Texas and California increased and the A.A.R. expects a brisk demand for refrigerators during the later months of the year.

Apart from factors which the railroads cannot control, it will be surprising if this period of financial stringency does not inspire them to try many new devices for improving operating methods and effecting economies. The Senate Subcommittee on Surface Transportation, which heard the railroads' plea for helpful legislation in January, thought that they might do a great deal to help themselves in many directions. Mr. P. M. Shoemaker, President of the Delaware, Lackawanna & Western—one of the 21 railroads in the Eastern District now in deficit—urged the railroad superintendents, assembled in congress at Chicago a month ago, to analyse their services and improve the standard of performance. That should not be difficult seeing that in 22 weeks to May 31 the number of wagons loaded was 3,072,000, or over 20 per cent less than in 1957 and 3,976,400, or 25 per cent below 1956 forwardings. The lower density of traffic should result in a striking advance in freight train speed and punctuality, now that over 92 per cent of gross ton miles in freight service are produced by diesel motive power.

The Senate Subcommittee also considered that a reappraisal of the entire railway labour situation was essential in the light of present circumstances. Under three-year agreements which continue until October 31, 1959, the aggregate payroll reached an all-time high last year, though the number of employees declined for the sixth consecutive year. The average earnings of employees rose from \$4.415 in 1953 to \$5.434 in 1957, an increase of 23 per cent. In addition supplemental costs for retirement taxes and other benefits amounted to nearly \$500 for each employee. The railroads actually paid about \$2.87 for each man-hour worked—surely one of the most fantastic results of a long spell of inflation. One operating officer has said emphatically that present methods of remuneration put a premium on inefficiency and, unless existing agreements in regard to pay and working conditions are revised judiciously many miles of railroad may have to be abandoned. Already since 1946, miles of road operated in freight service are nearly 5,000, or 2 per cent, fewer, while passenger services have ceased to run on 48,650 miles, a decrease of 30 per cent.

In past years the railroads have surmounted many emergencies, but results for the first four months of 1958 were extraordinarily poor. Operating revenues were \$57 million lower (1.8 per cent) than in the lean traffic year 1954, while expenses were \$28 million higher (1.1 per cent). This year's operating ratio was 83.25 per cent against 80.75 in 1954. Earnings, before charges, were \$121.5 million compared with \$206.7 million in 1954 and \$295.6 million last year. It is estimated that the railroads were left with a net income of \$48 million on April 30, a decrease of \$176 million (78 per cent) in twelve months. Even that pittance is in danger of disappearing now, as it did in the dismal years of the 1930s.

Meantime the railways are waging a vigorous economy campaign which curtailed expenses in the month of April by \$81 million, nearly 12 per cent below April 1957 and about \$2 million less than the 1954 figure, a paltry difference. It is to be hoped that a large share of these savings does not represent an undue weakening of the maintenance of permanent way and equipment. The railroads should plan to be in a fit state to handle any increase in traffic volume, which an industrial recovery may create at no distant date.

Letters to the Editor

(The Editor is not responsible for opinions of correspondents)

The Norfolk & Western Railway

July 12

SIR,—An editorial note in your July 11 issue gave some fresh facts about the changeover from steam to diesel motive power on the Norfolk & Western Railway. Towards the close of June its President, Mr. Stuart T. Saunders, rounded off the story by announcing that his railway proposed to purchase 268 diesel units at a cost of \$50 million.

When delivery of the new units is completed by the end of 1961, steam power will no longer be used for the regular movement of traffic. About 200 steam locomotives will have been retired by that time; the rest of the existing stock, 60 in number, will be retained as stand-by power for use in emergencies.

Yours faithfully,

R. BELL

Clacton-on-Sea

Anglo-Scottish Train Services

July 14

SIR,—The experience gained in recent months on three of the trains running between Euston and Glasgow and Kings Cross and Edinburgh with scheduled departures in the early morning and late afternoon leads me to extol their all-round excellence.

Amongst the features most sought after by the ordinary passenger, the extreme comfort and steadiness even at the highest speeds, the impeccable meal services, and the unstinting attention from all the staff left a lasting impression.

From the technical standpoint, I had unexampled evidence of the ability of our magnificent Pacific locomotives, none of them in the first flush of youth, to steam continuously for long periods in the maintenance of timings that admit of no let-up. Such was the "exactitude" of the trains of my choice—the up morning "Caledonian" (Glasgow to Euston), the down "Fair Maid" (Kings Cross to Waverley), and up "Talisman" (Waverley to Kings Cross)—that our arrivals were 4 min. early, 1 min. late and 1 min. early respectively; the fact that on no occasion was the line free from permanent way repair slacks and other minor hindrances is a tribute not only to the locomotives but to the superb competence of the enginemen.

The entire fleet of eight trains in this category and the unquestionable advantages that they offer to businessmen and tourists alike need the widest promulgation. One of the Regions concerned has already taken modest steps with this in view; but more can still be done, for these train-services are an asset in which British Railways can take a justifiable pride. They represent a story of enterprise which should be told and re-told in no uncertain manner for the benefit not merely of our own people but also of those many who come, particularly in high summer, from overseas.

Yours faithfully,

J. E. L. SKELTON

9, Keble House, Manor Fields, S.W.15

THE SCRAP HEAP

Aerial Reconnaissance

To see London in an hour, American railway chief Mr. John E. Kusick [a Vice-President of the Chesapeake & Ohio Railway] chartered a helicopter and viewed it from the air before catching his flight to Rome from London Airport. "It was very impressive," he said. "I had a close look at a lot of railway terminals. They certainly looked fine from the air."—*From the "Daily Mail."*

Relative Values

We get, for moving a ton of freight a mile-and-a-half, what it costs us to buy one common or garden variety lead pencil. The cost of one keg of track spikes equals the revenue from hauling a ton 1,286 miles. Buying real big stuff, like a two-unit diesel locomotive, can eat up the take from freighting a ton of lading 30 million miles—about from here to one of the more exclusive suburbs of Mars.—*From the Canadian National Railways Magazine "Keeping Track."*

Wrong Advice

A traveller in Turkey . . . was impressed by the *esprit de corps* of Turkish railwaymen. These are among the best paid workers in the country and there is often a strong family tradition of service. Trains are well patronised

and they run to time. Journeys are, however, usually long and rather tedious. In addition to the mountainous nature of much of the route even the most famous expresses stop at nearly every station. After one such long and rather trying journey he was amused by the advice offered by a B.E.A. sign on the main arrival platform at Ankara: "Experienced travellers fly."—"Peterborough" in *"The Daily Telegraph."*

Bald Untruth

(See our July 11 issue)

The decision that railway porters may no longer get their hair cut in railway time is said to be due to the large number of bald porters who bought wigs, took time off to "visit the barber," and came back singing loudly.—*"Beachcomber" in the "Daily Express."*

Results of Standardisation in India

According to the Indian Railway Board, there were, in 1923, over 500 different classes of locomotives in use on the Indian railways, with a wide variation of wheel arrangements, wheel sizes, and axle loadings. The policy of standardisation and rationalisation undertaken between 1923 and 1930 resulted in a reduction of the number of classes to 377 by 1952. It is expected that a further rapid reduction will occur by about 1965.

The G.W.R. Reaches Oxford (1844)

By 1846 [ecclesiastical] controversy had worn itself out; the *ferrea via*, or railroad, attracted even the clergy more than the *via media* [of the Tractarians]. Instead of High Church, Low Church, or Broad Church, they talked of high embankments, the broad gauge, and low dividends: Brunel and Stephenson were in men's mouths instead of Dr. Pusey; Mr. Hudson [the railway king] was in the ascendant instead of Dr. Faussett; and speculative theology gave way to speculations in railroad shares.—*Comment by an Oxford man of the 1840s, quoted by the Warden of All Souls College, Mr. John Sparrow, in a B.B.C. broadcast.*

Right Side of the Tracks?

In moving from one part of our suburb to another a quarter of a mile away we have Crossed the Line. The Line, one of the main routes of the London Midland Region, runs roughly east-west and splits our residential area in two. . . . There is no geographical segregation. The Line is spanned by a road bridge and a foot bridge four or five hundred yards apart and communications are not cut off even in the bitterest weather. The "village" high street remains the nerve centre of the whole community. The iron road is not an iron curtain. And yet to transfer one's household from south to north of the Line after some years' residence brings one a strange

sense of the mutability of human life. . . . We have achieved a new angle merely by moving a quarter-of-a-mile. . . . Things can never be the same again. We have Crossed the Line.—*Harry Carr in the "Manchester Guardian."*

Somebody's Nuts

A Charing Cross—Hayes train was held up at London Bridge when a sack of nuts and bolts was found on the roof.—*From the "News Chronicle."*

Suburban Buffet Cars

The Western Railway Company of France, which deals with an immense suburban traffic, has during the past few months been trying a novel experiment, which has proved very successful. Every suburban train leaving the St. Lazare Station . . . is now provided with a "wagon-bar" or travelling café. . . . These travelling bars are crowded with business men who live in the suburbs. The company has been endeavouring to extend these wagon-bars to its main lines, but the interests of the various refreshment contractors who run the buffets have so far proved an insurmountable obstacle.—*From "The Financial Times," June 29, 1898.*

[This venture, like others of the same sort, was not successful, presumably because the takings on short journeys did not cover expenses. Catering in main-line trains of the Western and State Railways of France, and of the Western, as of other Regions of the S.N.C.F. today, was and is by the Wagons-Lits Company. A remarkable "rapid-transit" train catering service was that of the electrified Wiener Lokalbahn, between Vienna and Badenbei-Wien (20 miles), which before the last war operated café cars.]

Reprieve?

(Sixty-three steam locomotives are included in the British Railways 1958 building programme)

How gratifying it must seem
To those whose hearts are still with steam
To learn that, though their favourites' day
Is fleeting, they won't fade away;
Far from it, for the powers that be
Call for another sixty-three.

Rail transport, in its varying moods,
Goes on delivering the goods;
Diesels plod on, electric fly,
But, when a good old "steam" goes by,
We get a pleasant thrill or two
And who shall blame us if we do?

The writing may be on the wall.
But still we know, whate'er befall,
That, though the clouds are gathering fast
Above these giants of the past,
As long as locos show a "plus,"
They'll never be quite posthumous.

A. B.

Relic of the West Midland Railway



Photo]

[D. J. W. Brough

At Kidderminster: one of the few inns named after a constituent of a pre-grouping railway. The West Midland was amalgamated with the G.W.R. in 1863

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

EAST AFRICA

Presentation to Sir Edward Twining

The retiring Governor of Tanganyika, Sir Edward Twining, has received two silver salvers, relics from the *Winifred* and *Sybil*, passenger-cargo steamers originally put into service in 1904 on Lake Victoria. Mr. A. H. Earley, Chief Ports Manager, made the presentation on behalf of Mr. J. R. Farquharson, General Manager, and staff of E.A.R. & H. Expressing his thanks for the gift, Sir Edward Twining took the opportunity of expressing his belief that Tanganyika had gained immeasurably from the amalgamation of the Kenya Uganda and the Tanganyika Railways into E.A.R. & H.

RHODESIA

Heavy Passenger Traffic

Passenger traffic over the Rhodes and Founders' holidays on July 11-15 is expected to have proved the heaviest ever experienced. All trains were fully booked and all available coaches used.

Doubling from Cement to Heany

Completion is announced of the doubling of eight miles of track from Cement to Heany Junction. Trains began running on the second line on July 8. The new work has eliminated the bottleneck caused by the former single

line between Cement and Heany where the main line is joined by the West Nicholson Branch.

Besides permanent way material the cost of the project, £186,000, includes items such as electric signalling, earthworks, culverts, and bridges.

Where the new double track crosses the Gokwe river a second bridge has been erected to carry the additional track; previously this bridge spanned the Nega Nega river in Northern Rhodesia. The span was reduced from 75 to 50 ft.

VICTORIA

Lease of Railway Land

The Victorian Railways have invited tenders for the lease of an area of land near St. Kilda Station, Melbourne, for the erection of a motel, or for purposes approved by the local authorities. The land has a frontage of 359 ft. to Canterbury Road and faces Cowderoy Street.

NEW ZEALAND

Railway Subsidy Proposed

The former Minister of Railways, Mr. J. K. McAlpine, stated recently in the House of Representatives that the Government should seriously consider diverting £1 million each year from the National Road Board funds to relieve

some of the loss on the railways. Rates and fares could not be increased any more, he agreed. The role of the railways today was to concentrate on heavy haulage and leave livestock and perishable and short-haul traffic to other forms of transport.

If the railways were abandoned, he added, it would cost £100 million in foreign exchange to buy the lorries to move the 10 million tons handled by the railways. The permanent way was the cheapest form of road to maintain. New Zealand was getting good roads for motor vehicles and he suggested that part of the petrol tax be taken and spent on the permanent way. He described as "wishful thinking" suggestions of co-ordinating road, rail, sea, and air transport. It was nothing more than a pipe-dream. The various forms of transport were diametrically opposed to each other.

WESTERN GERMANY

Level Crossing Accidents

The number of fatal accidents at level crossings decreased in 1957, despite the rise in the number of road motor vehicles in circulation. The number of accidents fell by 16 per cent and the number of deaths by 22 per cent, compared with 1956.

During recent years, 1,700 level crossings have been eliminated and more than 1,000 luminous signal installations have been applied to the many level crossings which were without such devices. This has resulted in more than 2,000 cases in improved visibility. For the maintenance and supervision of level crossings, which number approximately 40,000, the Federal Railway spends DM170 million a year.

BELGIUM

Railway Exhibits at Brussels

The S.N.C.B., on behalf of the International Union of Railways (U.I.C.) laid eight tracks for railway exhibits at the Brussels International Exhibition. On seven of these are displayed motive power and rolling stock of the S.N.C.B., S.N.C.F., R.E.N.F.E., and German, Austrian, and Swiss Federal Railways, also coaches of the Cie Internationale des Wagons-Lits.

The eighth track is reserved for wagons, other freight-handling equipment, and in particular for equipment used for door-to-door and road-rail services, some of which are the subject of demonstrations.

As the exhibition is not connected directly with the railway, the exhibits were conveyed to the site from the station of Jette, the nearest to the site, by special road vehicles placed at the disposal of the Organising Committee by the S.N.C.F. and German Federal Railway.



New bridge over the Whangaehu River near Tangiwai, New Zealand Government Railways, which replaces the temporary one erected after the accident on Christmas Eve, 1953. The bridge comprises one 40-ft. and two 120-ft. steel spans

*Seventeenth International Railway Congress***Financing and Conserving Railway Properties and Assets***Methods used in the renewal of installations and rolling stock*

QUESTION 8 on the agenda of the International Railway Congress Association at its Madrid session in September is concerned with the financial means used for the normal renewal of permanent installations and rolling stock. Ministerialrat Dipl.-Ing. V. Felder, Austrian Federal Railways, has compiled the report on practice in English-speaking countries and on certain railways overseas which tend to follow English practice.

As far as State railways are concerned, the funds needed for capital investments are provided by the State through its budget, or else they are authorised by the State to raise loans. In the first case, the State obtains the necessary funds either from its ordinary receipts, or also by raising loans, which are made either in the form of a special railway loan, or a general State loan without special attribution of the amount raised.

Where funds are raised by loans, most of the State railway administrations are not generally responsible for the interest and sinking fund charges on the capital. Sometimes, however, the railway is responsible for the interest, but not the sinking fund charges. Only the Malayan Railway and the Ceylon Government Railways are responsible for both interest and sinking fund charges.

In the case of the Austrian Federal, New Zealand Government, Ceylon Government, and Norwegian State Railways, the railway budget is part of the State budget. In the case of the Rhodesia Railways, this is only true of the investment budget, whereas the operating budget is drawn up independently of the State budget. On the East African Railways & Harbours, Malayan Railway, South African Railways & Harbours, Iranian State Railways, Japanese National Railways, and Swedish State Railways, the railway budget is in fact autonomous, but it is subject to parliamentary authorisation like the State budget. Only the Egyptian Republic Railways, London Transport Executive, Coras Iompair Eireann, and Nora-Bergslags Railway (Sweden) and Association of American Railroads prepare their own budgets quite independently of the State budget.

Conservation of Assets

All the administrations which replied to the questionnaire stated unanimously that the conservation of the value of the assets should be assured by the operating or profit and loss account. Six administrations stated that the expenditure in connection with the maintenance and renewal of the railway installations should represent 35 to 50 per cent of the total operating costs, which shows the considerable importance of the conservation of assets.

Two financial measures are in common use for the replacement of capital investments. The older, which is no longer used by industrial undertakings, is still used by many railway administrations, especially those having the character of a State railway on which there is a close inter-dependence between the railway budget and the State budget. This entails including in the budget and the direct accounts the cost of renewal debited to the operating account. With this method, a reduction in value due to insufficient renewals, is not shown in the balance sheet.

The modern method widely used in industry generally, consists of debiting the operating account with the total of the sinking fund charges corresponding to the depreciation, and to put the opposite entry in the capital account, or, in the case of indirect depreciation, in a regulating account. With this method the cost of renewing and extending the installations comes into the capital account.

Renewal Fund

A similar effect is obtained by having a renewal fund which is allocated each year, according to the operating account products, sums corresponding to the depreciation of the installations. The actual cost of renewals are not credited to the capital account, but debited to the renewal fund.

Some administrations employ both methods. They debit the operating account with the actual cost of renewals for the installations as a whole, in particular to the roadbed, permanent way, overhead electric equipment, and so on, and use the depreciation method for isolated installations dealt with individually.

If the receipts are insufficient to cover the cost of renewals debited to the operating account, and if no provision is made to meet an eventual deficit, for example in the general state budget, the first method will lead to cutting down on the renewal programme which is often unjustifiable economically and technically. On the other hand, the depreciation method does not in general allow for such an arbitrary cutting down of the operating costs and is more likely to lead to the consequences of the deficit being felt sooner.

The taking over of an operating deficit by the State is nearly always preceded by some cutting down especially in the funds needed for renewals.

Depreciation

With the financing of the renewals of railway installations, management were also asked what depreciation rates were applied by industrial undertakings in the country for industrial installations comparable with those of the railway

and approved by the fiscal authorities. There were very few replies to this question but in general it can be stated that there are no special differences between industrial and railway undertakings, although there is a tendency for shorter depreciation periods in industry.

This tendency may be due in part to the fact that the depreciation is only authorised fiscally for the nominal accountancy value; it will be wiped out in those countries where, on account of a great reduction in the purchasing power, a revaluation of the installations is allowed by law in the balance sheets, one single such revaluation being allowed. The need to catch up with the accumulated delays in renewals on several administrations, and to follow technical progress, in the opinion of the reporter, show that it is advisable to reduce rather than prolong the useful life on which the depreciation periods are based.

Variations in Purchasing Power

A question of particular importance in studying the problem of the conservation of the substance of the invested capital of the railway is that of knowing how the administrations obtain funds to replace the installations which have to be renewed at much greater cost and if and how account is taken in the accounts of the administrations of the variations in the invested capital due to the decline in purchasing power.

It appears in effect that in periods of constant reduction in purchasing power, it is incorrect to base the calculations upon nominal values. Calculating the depreciation of the installation at the historic prices of purchase or manufacture results in the conservation of the nominal capital, but does not create conditions in which it is possible to replace the installations whose cost has gone up in the interval, which leads to loss of assets.

The structure of the capital of a railway undertaking, with its considerable investments combined with the possibility of using, often for a great many years, costly parts of the installations, makes such an undertaking particularly sensitive to fluctuations in the value of money. There is a risk therefore in the case of railways of operating them for many years without the value of the installations being accounted for in total at present levels. The difficulties only become obvious when renewals become necessary.

The accounting of the expenditure required for renewals to conserve the substance is affected by debiting directly the operating account with the actual renewal costs, or with the sums theoretically necessary to endow a renewal fund, or with the depreciation credited to a regularisation fund.

Resilient Pads on Permanent Way

Absorption of shock in conjunction with concrete sleepers and elastic fastenings

(By a correspondent)

WHERE flat-bottom rails are used in conjunction with concrete sleepers it has been generally recognised that there is a need for some form of resilient pad to be interposed between the two. This practice is justifiable because concrete does not satisfactorily withstand the repeated impacts which it experiences in the form of a railway sleeper. Information on this

with varying degrees of success. These fastenings, by virtue of the toe load which they exert on the rail, exert an influence upon the unload part of the load/unload cycle; and as a resilient pad is sandwiched between rail and sleeper the effect is felt upon the resilient pad and influences its behaviour. The rails are also subjected to high frequency vibrations during the pas-

All elastic fastenings, whether singly or doubly elastic, that is, whether their load deflection curve is a straight line or has a change of gradient, operate about an initial deflected position which provides their working toe load. In the case of the doubly elastic fastenings their design is normally so arranged that the change in gradient of their load deflection curve occurs at this working toe load and, in practice, fastenings of this type usually utilise this fact to give an indication when being laid that the correct toe load has been reached.

In Fig. 1, two hypothetical load deflection curves have been drawn with a common load axis. The curve on the right OA_1B_1 represents that of the fastening whilst the curve on the left OA_2B_2 that of the matched pad.

The fastening is designed to be pre-tensioned at point A_1 (OA represents the design toe load). Ideally line OA_1 should be as flat as possible so that vertical downward movements of the rail due to pad compression shall not result in large reductions in toe load. Conversely, as the rail tends to lift it must meet with an increased resistance and thus line A_1B_1 should be steep.

The load deflection curve of the pad, OA_2B_2 , should be so arranged as to have a change in its gradient at point A_2 which occurs at the same pre-tension load as the fastening, that is at load OA . When a load is directly over the sleeper, this is added to OA and it is desirable that the resulting deflection of the pad be small so that the corresponding loss of load from the fastening is kept as small as possible. If, therefore, AB is the additional load now acting on the sleeper, the additional de-

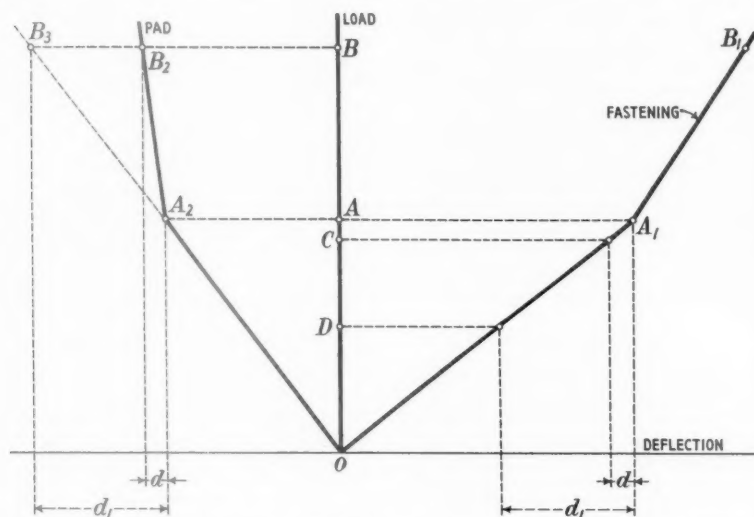


Fig. 1—Two hypothetical load deflection curves with a common load axis

subject appears in two papers presented to the Institution of Civil Engineers, Railway Engineering Division, Session 1943-1944, entitled "Experiments on Reinforced Concrete Sleepers," by F. C. Johansen, and "Experiments on Concrete Sleepers," by F. G. Thomas, in which figures are given for estimates of the order of loads which may develop between rail and sleeper.

Load Applications

Apart from these compressive loads and in view of the fact that the rail is attached to the sleeper by some form of resilient fastenings, it is of interest to know what occurs between successive compressive load applications. During the passage of a load over a rail supported on sleepers, a deflection of the rail takes place downwards beneath the load accompanied by lifting of the rail on either side of the load. This process causes the formation of a precession or bow wave, the amplitude and wave length of which is dependent upon the stiffness of the rail, the elasticity of the ballast and formation, the weight of the sleepers, and the velocity of the load. These considerations have given rise to a number of designs of rail sleeper fastenings which have met

sage of wheels and, due to its position relative to the rail, the resilient pad must be able to absorb these movements.

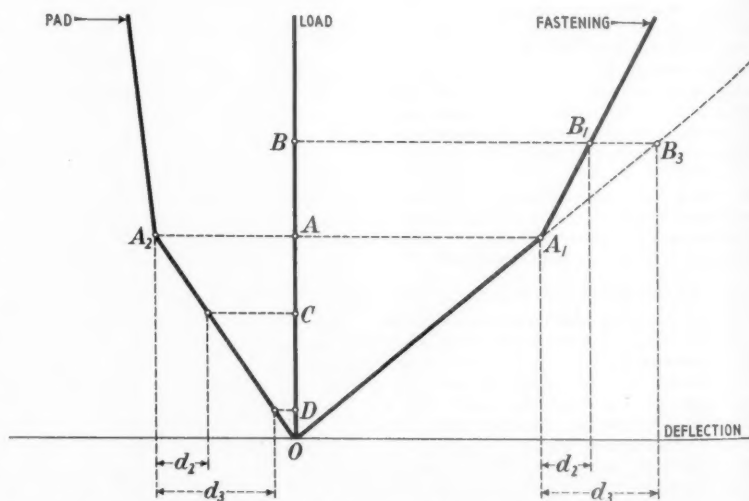


Fig. 2—Two curves as in Fig. 1., but with the rail tending to move vertically upwards as a result of the precession wave

deflection of the pad is "d" and an equal deflection of "d" in the fastening will, from the curve, give a loss in load of AC.

If line A_2B_2 of the pad load deflection curve had, for example, been A_1B_1 , the deflection of the pad under load AB would then have been d_1 and the corresponding loss in the fastening load would have been AD.

A condition could arise in which the whole of the load OA from the fastening would be released, that is, if the fastening lost contact with the rail. Assuming that the loads experienced remain sensibly constant in magnitude, the avoidance of complete loss of toe load can be effected by making the gradient of OA_1 for the fastening as small as possible and the gradient of A_2B_2 for the pad as steep as possible within reasonable bounds.

Fig. 2 shows the two hypothetical load deflection curves as before but with the rail tending to move vertically upwards as a result of the precession wave. Using the same argument as before, the application of any load AB upwards causes an increase in the fastening load of this amount which in turn causes an additional deflection of d_2 . This allows the load AC on the pad to be decreased by an amount corresponding to this same deflection d_2 .

The load deflection curves for the pad and fastening are closely inter-related and as a consequence the behaviour of one cannot be divorced from that of the other.

Design of Pad and Fastenings

In considering the design of both pads and fastenings if parting of components is to be avoided and excessive loss of load reduced, it is desirable that both fastening and pad should have two stage stiffness as low as possible between the range zero load to toe load, and as high as possible at loads above the toe load. There is an optimum curve for the pad OA_2B_2 , which matches the fastening curve OA_1B_1 . Other curves can be drawn for the pad to satisfy the criteria outlined but other considerations will again provide limitations to these.

The most convenient way of changing the gradient of the load deflection curve of a pad appears to be the method already adopted by manufacturers producing rubber resilient pads of moulding configurations into their surfaces. The physical effect of these various shaped elevations and depressions in the surface of a pad is that as a load is applied the elevations become reduced in height and the displaced rubber fills the depressions until such time as the depressions are entirely filled by displaced rubber when the stiffness becomes that of a flat sheet of rubber. In this condition, whilst some shear strain can occur at its edges, the pad is virtually behaving in bulk compression in which state its stiffness is high. Before the depressions are filled, each elevation on the surface tends to behave more in shear than in bulk compression.

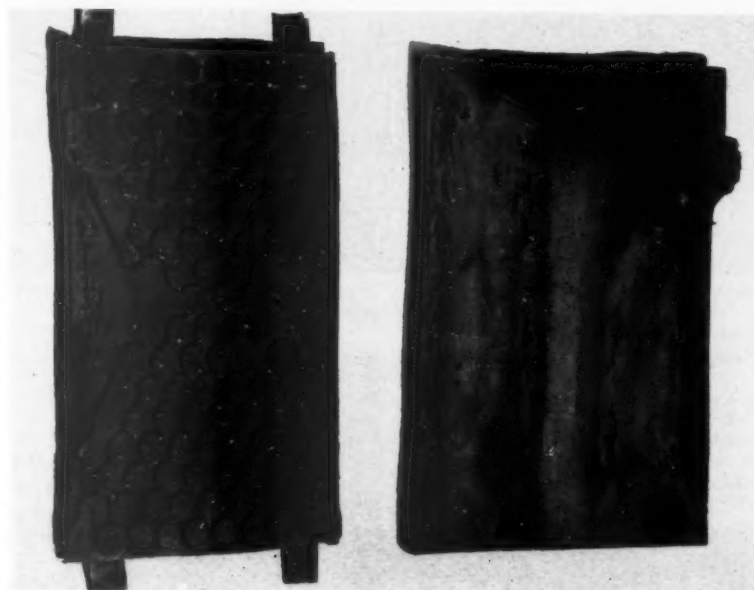
After establishing an optimum curve for the pad relative to the fastening with which it is to be used, the next consideration is to decide upon the absolute values of stiffness needed to cope with the order of loads expected to act upon the pad.

Loading

Two main forms of loading normally occur under the passage of trains. They are frequently occurring on normal loads which are not of great magnitude, and higher magnitude loads which only arise occasionally. Mr. Thomas in his paper mentioned above, shows that these normal loads have a frequency of occurrence of between 20 to 50 times the frequency of occurrence

sq. in. The unit loading, assuming even distribution, is therefore some 150-250 lb./sq. in. with peak loadings of the order of 1,100 lb./sq. in.

The assumption of even distribution across the pad is, however, not correct from either theoretical or practical considerations. There is some difference of opinion as to the theoretical distribution of pressure across a pad, dependent largely upon whether or not it is assumed that the rail foot is rigid compared with the rigidity of the pad. Whilst it can be shown that some deflection of the edges of the rail foot can occur under load, it is considered that such deflections as occur in the steel are negligible when compared with those occurring in the resilient pad and that



Normal design of pad (left), showing configurations compared with inadequately designed pad, after test on the same machine in identical conditions

of these higher magnitude or maximum loads. Concrete sleepers appear to suffer most damage from these frequently applied normal loads and these loads, therefore, dictate the choice of material and subsequent design. As a secondary consideration, the material must also be capable of withstanding occasional overloads.

These frequently occurring loads for modern heavy fast traffic are found to be of the order of 3 to 5 tons per rail for coaches and locomotives respectively. The occasional overloads may be from 10 to 22 tons respectively.

The maximum area of pad which can be employed to bear these various loads is governed by the width of the rail foot and the width of the sleeper and, because of a variety of other factors, these two dimensions remain sensibly constant in this country. The rail foot width is a constant at $5\frac{1}{2}$ in. and present concrete sleeper design invariably produces a sleeper of about 8 in. width at its top. The maximum area of pad, therefore, becomes 44

the rail foot can be considered to be rigid. On this basis and insofar as rubber resilient pads are concerned, the distribution across them is parabolic. From the practical aspect, the rail acts as a continuous beam spanning sleepers and under the action of a rolling load assumes angled positions along its longitudinal axis relative to the sleepers. This rocking action leads to load concentrations towards the edges of the sleepers which are superimposed upon the parabolic distribution due to purely vertical loading. Examination of inadequately designed pads removed after service show these stress concentrations quite clearly.

It seems probable that localised pressures in the order of 500 to 2,000 lb./sq. in., at least twice as large as those previously calculated, could arise. It is desirable that these localised pressures should be eliminated and an attempt made to secure even distribution if economical use of the material and long life are to be obtained.

(Continued on page 74)

Fully Mechanised Coal Depot at Palace Gates, Eastern Region

Served by shuttle trains of 21-ton self-discharging hopper wagons



Switchbox of power winch (at end of sidings) for positioning wagons over hoppers. Note size of hopper apertures under 21-ton wagons

THE mechanised coal depot of Charrington, Gardner, Locket & Co. Ltd., at Palace Gates, Wood Green, is the first installation of its kind in Britain; it has been designed and built specifically to increase the efficiency and speed of coal deliveries to domestic consumers in a wide area of North Lon-

don. Because coal is friable and varies in size and shape, the latter being often irregular, handling plant must move it gently, maintain a uniform rate of flow irrespective of size variation, and deliver it with as little damage as possible into a sack or bag. The equipment has been designed accordingly.

The depot is situated on the Seven Sisters to Palace Gates branch of the Great Eastern Line of British Railways. Shuttle trains of full and empty 21-ton wagons run from and to collieries in the Eastern Midlands, via the Great Northern Line, Stevenage, the Enfield loop, and Bowes Park. There are also occasional wagons from and to South Wales collieries via the North London line and Temple Mills.

Sidings

Filled wagons arrive at the rate of three trains a week, consisting each of 18 21-ton hopper-bottom wagons per shunt. There are three sidings at Palace Gates, two 600 ft. and one 450 ft. long. The wagons are worked in set trains, to reduce shunting, allow train load working, and to achieve the benefits of through routing and fast working of braked wagons. On arrival trains are divided into two sections and shunted on to the sidings. This enables one engine to deliver the filled wagons to the siding and collect a load of empties for return to the pits, which much improves wagon user. It is hoped to use vacuum-fitted wagons shortly.

Wagon Discharge

Once the wagons have been delivered to the siding all movement is taken over by the siding staff. A powered winch is available for moving either half of the train and any wagon can be positioned exactly as required. The



General view of depot, showing 21-ton hopper wagons worked in 18-wagon trains from Eastern Midlands; also elevating conveyor fed from hopper under wagons, and movable walls of storage bays

wagons used are all of the standard 21-ton hopper type, and coal is unloaded without manual effort. The coal discharged from the wagon is received in a small hopper located beneath the rails, and specially designed for the purpose. With the initial fall from the wagon, a column of coal is formed between the hopper and the wagon and discharge from the wagon cannot continue until coal is taken from the hopper.

The under-rail hopper feeds on to an elevating conveyor; the feed is controlled by a reciprocating feeder to a rate well within the capacity of the conveyor. Discharge from wagons is supervised by only one man; a second is stationed at the top of the conveyor; and the third works in the yard.

Elevating Conveyor

The elevating conveyor is of the articulated steel pan type, and in an application such as at Palace Gates there are many advantages to be gained from the use of this sort of machine. The conveyor is 127 ft. long at an angle of 30 deg. and can handle 120 tons of coal an hr. Its vertical height is 50 ft. from bottom of the pit to the top of the conveyor.

The direction of travel changes from horizontal to inclined with a saving not only of machinery complication, but also the elimination of the drop that would otherwise occur if two conveyors were used. The conveyor operates at an angle steeper than is possible with a belt conveyor. This reduces the overall length required and in consequence the space required at ground level.

Because of the cupping action of the pans, the volume of coal carried per ft. run is greater than that for a rubber belt type conveyor of equal width. This extra capacity allows use of a lower belt speed and gives reduced wear on the moving parts and a gentle handling of the coal. Another advantage of the conveyor is that breakdown caused by belt damage is eliminated and repair or



Elevating conveyor from (left) under-rail hopper in pit

replacement of the bucket line made simple.

At the discharge end of the conveyor the coal passes over a screening unit where any small, made in transit, can be removed.

The screen is equipped to remove any coal below $\frac{3}{8}$ in., but the sizing can be changed as required. The screen is double decked and is a 60 in. \times 160 in. vibratory type. The top deck has a 2-in. square aperture and the bottom deck is $\frac{3}{8}$ in. wide, elongated on the discharge end to $\frac{1}{2}$ in. The screens are powered by a 10-h.p. motor, driving at 1,000 r.p.m. and have a capacity of 120 tons an hr.

From the screen unit the coal is transferred to a shuttle conveyor for distribution to any one of a bank of 12 hoppers. This conveyor is 36 in. wide

and four-ply 32-oz. duck rubber and canvas, with an $\frac{1}{8}$ in. top and a $\frac{1}{16}$ in. bottom rubber surface on 2-ft. head and tail drums with 70-ft. centres. It is powered by a 3-h.p. geared motor and traversed by a motor of 7 $\frac{1}{2}$ h.p. and has a capacity of 120 tons an hr.

The shuttle conveyor travels over the hoppers on rails, and as it will cover half the hoppers in either direction about the centre, coal can be conveyed from the screen to any hopper by running the belt in the appropriate direction.

Hoppers

Too small a hopper would have slowed down throughput by making the intake of the plant tied too closely to the rate of unloading, while too large a hopper, by virtue of the necessarily long drop, would create an excessive amount of small. To achieve the best results in conjunction with the optimum capacity the hoppers are fitted with rubber lined anti-breakage devices.

The hoppers, all of which terminate in a sack-filling feeder, have the same capacity as the railway wagons. There are 12 hoppers, each of 20-ton capacity, with dimensions 10 ft. \times 14 ft. high and with a total length of 120 ft. The discharge height is 11 ft. from the ground, platform height 3 ft. 6 in. from the ground, with a bag scale platform 7 ft. from the ground and a sack scale platform 6 ft. 4 in. from the ground.

Lorry Loading Bay

At the lorry loading bay the aim is to present an accurately weighed sack at a height convenient for lorry loading. The main staging is at lorry floor level, and the sack or bag is filled at backing height and lorry loading is a simple carry from the weighing machine to the vehicle.

Coal is brought forward by pressure on a footswitch and a correct weighing



Return of stored stock by mobile shovel to hopper circuit

made by reference to an indicating pointer on an adjacent scale. The fine control obtained over the rate of flow and the clear view of the coal coming forward makes accurate weighing easy. The Charrold bagging units are powered by 1½-h.p. geared motors and each unit has a capacity of 10 tons an hr.

Storage

To provide a ballast stock to cover fluctuations in supply and demand, storage bays are provided on the site. The walls of these bays are formed from Stelcon free standing units and capacity is provided for 6,000 tons. When coal is to be put into stock, the shuttle conveyor is traversed beyond

the end of the hopper bank and coal discharged on to a long chute. The chute conveys the coal down to ground level from where it can be picked up by mobile shovel and transported to the appropriate storage space. In order to make full use of the space available a mobile conveyor elevates the coal if required. When stock is recovered coal is picked up from the ground with a mobile shovel and put back into the hopper circuit.

The plant can be operated by three men, of whom only one is stationed on the sidings by the under-rail hopper. As stated, no British Railways staff are required between placing of the rakes of hopper wagons (including the brake van at the terminal end of

the siding) and the drawing of empties and replacement of another loaded train. The equipment was designed by Charrold Limited. Sub-contractors include:

Winching device (electrically driven, 20 h.p.)	A.C.E. Machinery Limited
Unloading pit and feeders (independent electric drive motors, 5 h.p.)	Carlton Engineering Limited
Elevating conveyor, type WS (one electric motor, 15 h.p.)	Wharton Engineers (Elstree) Limited
Screening unit (one electric motor, 10 h.p.)	Niagara Screens Limited
Shuttle conveyor (one electric motor for travelling, 7½ h.p. and one for conveyor drive, 3 h.p.)	Niagara Screens Limited
Hoppers (to Charrold Limited specification)	Niagara Screens Limited
Sack filling units (one electric motor per unit, 1½ h.p.)	Charrold Limited
"Muir-Hill" mobile shovel, type 2WL	E. Boydell & Co. Ltd.
Mobile conveyor	Fysons Limited

Resilient Pads on Permanent Way

(Concluded from page 70)

The opinion that the securing of even distribution of pressure over the face of a pad, with particular reference to rubber pads, is not a good practice since it applies more pressure to the edges of the pad where shear strains can occur with deleterious results to the rubber, is only valid when such configuration as the surfaces of the pad possess are completely eliminated by load. Before the elimination of these configurations, shear strain can occur at the edges of each individual configuration as well as at the edges of the whole pad and because these shear deformations are proportional to the applied vertical load, it is advantageous to reduce the high values which occur at the centre and two ends of the pad and spread the whole load uniformly. By this arrangement, whilst the sides of the pad become loaded more than they would have been without even distribution and in consequence suffer more shear deformation than before, the centre and the two ends of the pad suffer less shear deformation than before. When the configurations are eliminated by load it is a disadvantage to attempt to secure even distribution because higher loads than normal would be placed at the sides where shear deformation can now occur.

For even distribution to be obtained over the surface of the pad the stiffness of the pad over its surface must vary as the applied pressure varies. At least one design exists which has solved this problem successfully.

Materials

Before selecting a suitable material for the manufacture of resilient pads, there are several requirements to be considered. A resilient pad must be capable of being rendered non-conductive for track circuiting requirements. It must not suffer from permanent set under the various loadings described, and it must be cheap. Rubber appears to be the only material which fully satisfies all the various requirements. In the case of wood, its load deflection curve assumes a generally curved shape

with very small deflections over the range of loads considered, such deflections not being completely elastic in nature. With felt, control over its elasticity is difficult whilst with cork or rubber-bonded cork, permanent set occurs and problems arise, due to absorption of water, in achieving insulating properties. Plastics appear to offer more possibilities and the production of a plastic with air entrainment and with no air leakage from its individual air cells might be the basis of a resilient pad of the future.

Rubber, however, can be made to conform with all the requirements considered and therefore would seem to be an ideal material from which resilient pads should be made.

SUBURBAN TRAFFIC IN THE U.S.S.R.—In our April 18 issue a summary was published of the report by Monsieur R. Carlier, of the Belgian National Railways, on replies to Question 6 on the agenda of the Seventeenth International Railway Congress to be held in Madrid in September. The summary contains, on page 450, the following sentence: "It is not practicable to provide every passenger with a seat at peak periods and most administrations operate coaches with a reasonable number of seats and ample standing space; but in Russia a certain number of vehicles with no seats at all are run in rush hours." We are informed by the International Railway Congress Association that the French text of Monsieur Carlier's report on which our summary was based, here embodies a faulty translation from the Russian. The latter part of the sentence should read as follows: "The U.S.S.R. Railways report that in suburban traffic coaches with 108 seats are used. Multiple-unit trains of nine coaches are in service both during peak hours and during periods when the flows of passengers decrease. There are identical hard seats in all coaches on electrified sections. During peak hours, passengers can travel without having seats for journeys of 10-15 km."

WELDING SCHOOL IN BELFAST.—A new welding school to serve industry in Northern Ireland is to be opened on October 1 by British Oxygen Gases Limited. It will be sited at the company headquarters at Castlereagh, Belfast. The

school will provide tuition in both oxy-acetylene welding and cutting and electric arc welding and a full-time instructor will be in attendance. Six benches will be provided for oxy-acetylene welding. An additional bench will be provided for arc welding, and equipment for this process will be supplied by Quasi-Arc Limited. Courses in metallic arc welding will also be available. A number of cutting machines will be available for use, including the Cub, Bantam, 36 in. and P.S.L. The school is equipped with a cinema where up to 30 people can be accommodated. Lectures and demonstrations will be provided for customers' operators and the school will also be used to enable customers to see demonstrations of special equipment and processes.

HUNGARIAN MACHINE TOOLS FOR CHINA.—Machine tools, lathes, radial drills, and milling machines are amongst exports from Hungary to China this year, and further deliveries are planned for 1959.

MODERNISED REFRESHMENT ROOM AT SHEFFIELD VICTORIA.—The reconditioned refreshment room on No. 3 platform at Sheffield Victoria Station, Eastern Region, opened recently to the public, represents the completion of the third and final stage of the waiting room and refreshment room modernisation at that station. The first and second stages, which included the ladies' waiting room and the general waiting room on No. 3 platform and a combined waiting room and tea room on No. 4 platform, were completed last year.

RISE IN MACHINE TOOL ORDERS.—A slight but definite improvement in orders for machine tool producers in recent weeks, and an appreciable increase in inquiries from this country, have been reported. The strengthening of order books is shared almost equally between home and export markets. The improvement in the home market is mainly because of the gradual relaxation of the credit squeeze, which has encouraged those customers who have been deferring re-equipment to take earlier delivery of machines. Greater activity began to occur in April, and a number of leading producers report that since then each succeeding month has been better than the previous one. With few exceptions renewed interest has been shown throughout industry and in all parts of the country. Parts of Scotland, the cotton towns, and the N.E. Coast shipyards however are "dull areas."

Swindon-Built Type "4" Diesel-Hydraulic Locomotives

First of 2,200-b.h.p., 78½-ton units enters service in Western Region of British Railways

THE first of three 2,200 b.h.p. diesel-hydraulic locomotives ordered for service in the Western Region, under the modernisation plan in the autumn of 1955 (see our issue of November 25, 1955) and built by British Railways at Swindon Locomotive Works, No. D800, *Sir Brian Robertson*, was formally placed in service last Monday. This was after a ceremony at Paddington, described on another page, at which Mr. K. W. C. Grand, General Manager of the Western Region, named the locomotive.

Low Service Weight

With Maybach engines and Maybach Mekydro hydraulic transmission, the units bear a close resemblance to the V-200 locomotives of the German Federal Railways, a feature of which, seen also in the British counterparts, is stressed-skin construction for integral underframe and superstructure. With the hydraulic transmission and lightweight quick-running engines, this has resulted in an all-up weight of 78½ tons.

Since the initial order for three locomotives of this design was placed

further orders of 30 and 34 locomotives of similar design have been placed by the B.T.C. with Western Region to be built by Swindon and North British Locomotive Co. Ltd. respectively. The latter units will differ, however, in having M.A.N. engines, and Voith transmission of the types seen in the five 2,000-h.p. AIA-AIA units now being delivered by the company for the Region; these latter were described in our issue of February 21, 1958.

The general layout of the locomotive is shown in the accompanying diagram. Leading particulars are:—

Weight in working order	78½ tons
Maximum axleload (approx.)	19½ tons
Length over buffers	60 ft.
Width over body	8 ft. 8½ in.
Height over ventilators	12 ft. 9½ in.
Bogie wheelbase	10 ft. 6 in.
Bogie pivot centres	37 ft. 9 in.
Wheel dia.	3 ft. 3½ in.
Maximum designed speed	90 m.p.h.
Maximum tractive effort (at 30 per cent adhesion)	52,400 lb.
Fuel tank capacity	650 gal.
Boiler fuel tank capacity	150 gal.
Boiler water capacity (nominal)	1,000 gal.

Multiple-unit working between a pair of these locomotives is possible.

As already mentioned, the whole

superstructure-frame unit is designed on the stressed-skin integral principle: by this, each constituent of the whole body framework, including what would normally be termed the underframe, side frames, and panel sheeting, carries its due proportion of the total load; thus leading to a considerable saving of weight compared with a conventional diesel locomotive.

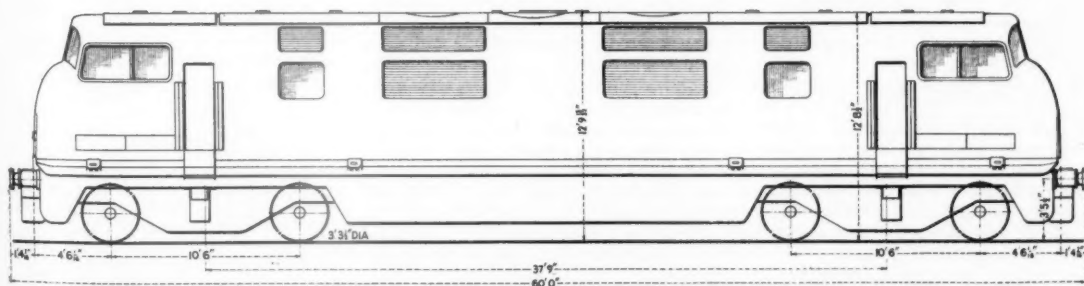
The basic principle of the frame design is two tubular members running through the main framing of the locomotive from one buffer beam to the other, and on, or near, the buffer centre-lines transmitting buff and drag.

Layout

Basically the locomotives are symmetrical, both internally and externally, about the centre at which a train heating boiler is positioned. Access to the locomotive is by a door on each side of the cabs. A side door leads directly into each engine room; the side passage way continues through to the cooling group compartment and thence to the centre boiler compartment. A feature



Type "4" 2,200-b.h.p. main-line diesel-hydraulic locomotive built at Swindon Works



General arrangement of Western Region 78½-ton B-B locomotive

of the design of the roof is that it can be removed entirely between each cab structure by five panels which allow access to the five main equipment compartments.

Cab Layout

Each driving compartment is fitted with two fixed forward windows, and a sliding window on each side, all metal-formed and by Beclawat. Insulation by means of 2½-in. thick Fibreglass panels is fitted to the inside of all exterior body surfaces except the nose sections and to the inner cab bulkheads. This is retained and protected by an inner lining mainly of perforated aluminium plate. The driving position is on the left-hand side where an adjustable seat is provided; another seat is provided on the right-hand side for the assistant; both seats being supplied by A. W. Chapman Limited.

Controls

The driving controls are grouped in front of the driving seat, the majority being mounted on one panel. These include vacuum and air brake control handles, main controller, main power switch and engine start/stop switches. The deadman's control is operated by a foot pedal, and a hand lever, at the driver's position, and a push-button at the assistant's side.

Also at the assistant's position are grouped the warning lights for transmission and causes of engine failure, besides the ammeter and voltmeter.

Mounted on each rear cab bulkhead is a handbrake wheel which operates on one pair of wheels on the adjacent bogie. Also on the bulkhead are the Pyrene hand fire extinguishers, and an emergency handle which is connected with the engine compartment fusible-link-operated carbon dioxide fire protection system also by Pyrene. Cab equipment also includes a heater by Smith's Industrial Instruments, and a hot plate.

Bogies

The four-wheel bogies incorporate features seen on the V.200 locomotives, including the Krauss-Maffei method of pivotless control and radius-arm type of axle housing assemblies.

The bogie frame is fabricated throughout from mild steel plate mainly of ¾- and 1½-in. thickness. The centre of the bogie is a strongly-made hollow rectangle into which part of the underframe, containing the output shaft and flanges of the transmission unit, projects.

The curved replaceable manganese steel rubbing plates fitted to brackets on bogie and underframe serve to absorb traction and braking forces. Transverse forces and centring action are taken care of by a linkage system connecting the underframe to the bogie. This allows the bogie to turn about a theoretical geometrical centre.

The weight of the locomotive is transferred to each bogie at two points only, on the bogie lateral centre, pads

on the loco body acting on the centre of two laminated springs on either side of the bogie. This is transferred by vertical coil spring assemblies interposed between a bracket mounted on the bogies and the ends of the laminated springs.

Transmission of the loading from bogie frame to the axle is by laminated springs, the centres of which bear on the top of the roller bearing casings, and thus to the axles. Bearings fitted are of the SKF self-aligning type. The pivoted axle assemblies, also all-welded, eliminate the need for conventional types of axle boxes and horns of any kind.

Brake Equipment

Air brakes are fitted to the locomotives and equipment is provided to control the vacuum brakes of the train proportionally. The air brake is basically of the Knorr type, built under licence by Laycock Engineering Limited but modified to the requirements of the British Transport Commission. This is the brake fitted to the V.200 units. Four 8-in. dia. brake cylinders are fitted to the outside of each bogie, each acting on two brake blocks on the adjacent wheel through clasp-type rigging.

One Knorr type compressor electrically-driven from the 110-V. circuit supplies the compressed air; and two Westinghouse 4B110 exhausters, similarly driven, the vacuum for operating the train brakes. Air from the brake system is used to operate the sanding gear, which applies sand to the leading axles of each bogie depending on the direction of travel; air is also used to operate the Laycock windscreen wipers fitted to both front windscreen windows, and the Desilux warning horns.

Engines

The two engines which are installed are of the Maybach MD650, twelve-cylinder vee-form pressure-changed type, set to a nominal 1,100 b.h.p. The engine is mounted on a subframe; this in turn has a three-point ball-joint mounting to the engine room floor. The usual engine protection devices for engine speed, high cooling water temperature, and high engine lube and transmission oil temperatures and so on are provided. Each engine has its own cooling system and auxiliaries functioning as an independent unit.

The cooling water radiator units are of the Serck-Behr type, which utilise the Behr principle of hydrostatic temperature control to adjust the speed of the fans and radiator shutter position.

A 33-gal. emergency fuel tank is located above the engine, in each of the engine compartments, in case of fuel supply failure.

Provision for pre-heating the engines for the purposes of warming up or prevention of freezing is made.

Maybach K.104U Mekydro transmission is fitted; this hydraulic trans-

mission equipment has a permanently-filled converter and four-speed gearing. Reversing gears are incorporated in the converter gearbox; final drive simple bevel boxes are of the Maybach C.33 type having a ratio of 11:30. Connection between the various transmission components is by cardan shafts with universal joints.

Control and Equipment

A comprehensive system of electrical controls and warning devices, supplied by Brown, Boveri & Co. Ltd., is fitted. The main controls, warning lamps, gauges and brake handles are grouped conveniently together in the driver's desk, while other gauges and warning lamps not necessary for driving purposes are situated on the other side of the cab. The main controller or power handle is the only one used by the driver, apart from the brake handle, for controlling the speed of the locomotive, as all gear changing is done automatically. The reversing handle, which is removable in the neutral position, is used as a master switch, and when in this position all controls are "dead." The engines are started up with the reversing handle in either the forward or reverse position, and the power handle may then be used for controlling the speed of the engines, but no power is transmitted to the road wheels until the power switch is operated. Only one reversing handle is used, even when locomotives are working in multiple, and in this way unoccupied cabs are made safe.

The 110-V. 276-A.-hr. capacity Kath-anode battery, housed mainly along one side of the locomotive centre section, is charged from two dynostarters supplied by Brown-Boveri; one is located in each nose compartment being driven through cardan shafts from the converter.

Train Heating

The train heating boiler is of the Spanner Swirlyflo type which has a steam production rate of 2,000 lb. per hr. at a pressure of 80 lb. per sq. in. It is fired from normal diesel fuel carried in a 150 gal. capacity tank. The nominal capacity of the boiler water tank is 1,000 gal. Provision is made for filling the tank from a pressurised water supply or lineside water cranes. The locomotives are equipped with the Western Region form of automatic train control.

Principal sub-contractors include:—

Engine and power transmission equipment	Maybach Motorenbau G.m.b.H.
Dynostarters and power control equipment	Brown, Boveri & Co. Ltd.
Brake control equipment and windscreen wipers	Laycock Engineering Limited
Exhausters	Westinghouse Brake & Signal Co. Ltd.
Cooling equipment	Serck Radiators Limited
Axleboxes	Skefko Ball Bearing Co. Ltd.
Fire extinguishers	Pyrene Co. Ltd.
Seats	A. W. Chapman Limited
Windows	Beckett, Laycock & Watkinson Limited
Heater	Smiths Industrial Instruments Limited
Train heating boiler	Spanner Boilers Limited
Battery	D.P. Battery Co. Ltd.

RAILWAY NEWS SECTION

PERSONAL

Sir Ralph B. Emerson handed over charge of the office of General Manager of the Nigerian Railway Corporation on June 30 to Mr. R. K. Innes, Chief Mechanical Engineer. Sir Ralph Emerson retains his appointment as Chairman of the Corporation. Although he will live in England, he will visit Nigeria as required for Corporation meetings.

served in France and was promoted to the rank of Major in 1917. He was transferred to Richborough as Works Manager in 1918 and was demobilised in 1919, after which he returned to Doncaster. In 1920 he was appointed Assistant Carriage & Wagon Superintendent, and in 1923 was made Assistant to Sir Nigel Gresley, who had become Chief Mechanical Engineer, L.N.E.R. He held this position until he joined the Southern Railway as Chief

Mr. T. Marsland, Chief Mechanical Engineer, Western Australian Government Railways, has been appointed Commissioner. Under the Government Railways Act, Mr. T. W. Brodie, whose term as Acting Commissioner has expired, could not be re-appointed Acting Commissioner after having served one six-month term of office. Had he been appointed Commissioner he would have held office only for four months before retirement.



Mr. O. V. S. Bulleid
Chief Mechanical Engineer, C.I.E.,
1951-58



The Late Mr. W. Douglas Lorimer
Director, North British Locomotive Co. Ltd.
1944-58

Mr. O. V. S. Bulleid, C.B.E., M.I.Mech.E., M.I.Loco.E., who, as briefly recorded in our last week's issue, has retired as Chief Mechanical Engineer, Coras Iompair Eireann, was formerly Chief Mechanical Engineer of the Southern Region, British Railways. He joined the former Great Northern Railway in 1901 as a premium apprentice at Doncaster. In 1906 he was made Assistant to the Locomotive Running Superintendent and, the next year, became Assistant to the Works Manager. He left the G.N.R. in 1908, on appointment as Assistant Works Manager of the Compagnie des Friens et Signaux of France. In 1910 he was appointed Mechanical Engineer to the Exhibitions Branch of the Board of Trade, for the Brussels and Turin Exhibitions of 1910 and 1911. He returned to Doncaster in 1912 as Personal Assistant to the late Sir (then Mr.) Nigel Gresley, at that time Locomotive Engineer, Doncaster, Great Northern Railway. In 1914 Mr. Bulleid was commissioned in the Army Service Corps. He

Mechanical Engineer in 1937. Mr. Bulleid was a member of the late Sir James Milne's commission which, in 1948, investigated the public transport position in Eire. Following publication of the commission's report he was invited by the Chairman of Coras Iompair Eireann to become Consulting Mechanical Engineer to that undertaking on his retirement from the Southern Region of British Railways, at the end of September, 1949. He served C.I.E. in that capacity until February, 1951, when he became Chief Mechanical Engineer of that system. He was President of the Institution of Mechanical Engineers for 1946-47; President of the Institution of Locomotive Engineers from 1939 to 1944; and President of the Institute of Welding for 1949-50. He is a member of the Smeatonian Society of Civil Engineers and is also a member of the general council of the Engineers' Guild. Mr. Bulleid was made a C.B.E. in 1949. In 1951 he had the rare distinction of being made an honorary member of the American Society of Mechanical Engineers.

We regret to record the death on July 10, at the age of 57, of Mr. William Douglas Lorimer, Executive Director of the North British Locomotive Co. Ltd. Mr. Lorimer was educated at Rossall School, and at Queen's College, Cambridge. He was the only son of the late Mr. William Lorimer, Chairman of the North British Locomotive Co. Ltd. from 1935 to 1946, and was a grandson of the late Sir William Lorimer, who was Chairman of that company from its formation in 1903 until his death in 1922. Mr. Douglas Lorimer, his father and his grandfather formed an unbroken link of family service with the company since 1864, when the constituent firm of Dübs & Company was founded. Mr. Lorimer was elected President of the Locomotive Manufacturers Association in 1950. This was the first time that two members of the same family have held that position, Sir William Lorimer having been President from 1900 to 1922. In 1951, Mr. William Lorimer went to India for discussions with the Minister of Railways and

Members of the Railway Board. He was one of the British Delegates to the World Economic Conference held in Moscow in 1952. He joined the board of the North British Locomotive Co. Ltd., in 1940.

Mr. A. J. Pearson, Chief of General Duties, British Transport Commission, who, as recorded in our July 11 issue, has been appointed Assistant General Manager, London Midland Region, British Railways, received his railway training with the former Cheshire Lines Committee. In 1931 was appointed Assistant Editor of *Modern*

sioner, Dr. J. W. Pickles, has been promoted from Serving Brother to Officer (Brother). Mr. N. L. Collins, Transportation Department and Mrs. L. Ferrett are admitted to the Grade of Serving Brother and Serving Sister respectively.

Mr. D. A. Stringer, Docks Manager, Fleetwood, British Transport Docks, has been appointed Docks Manager, East Coast Scottish Ports, Grangemouth. He is succeeded at Fleetwood by Mr. A. D. Morgan, Assistant Docks Manager, King's Lynn.

Mr. L. F. Leonhardt, General Agent, London, Canadian Pacific Railway, has retired. He is succeeded by Mr. R. J. Harden, General Agent, Passenger Department. Mr. F. L. Burton, Assistant General Agent, becomes General Agent Passenger Department. Mr. H. K. Williams has been appointed Assistant General Agent.

Mr. C. T. Long, B.Sc. (Eng.), Assistant Chief Mechanical Engineer (Design and Development), South African Railways, who, as recorded in our June 27 issue, has



Mr. A. J. Pearson

Appointed Assistant General Manager,
L.M. Region, British Railways



Mr. C. T. Long

Appointed Chief Mechanical Engineer,
South African Railways

Transport. Three years later he returned to the railway service as Personal Assistant to the Vice-President (Finance & Service), L.M.S. In 1939 he became Assistant to Vice-President and, in 1941, Assistant to the President. On nationalisation of the railways, in 1948, Mr. Pearson was appointed Chief Officer (Administration), Railway Executive, and became Chief of General Duties, British Transport Commission, in 1954. Mr. Pearson, who is a Member of the Institute of Transport, has been a Member of Council on two occasions. He is holder of the Institute's Canal Gold Medal (1932) and B.T.C. Award (1953).

Her Majesty the Queen has approved the admission of Mr. J. W. S. Pegrum, General Manager, Rhodesia Railways, to the Grade of Officer (Brother) in the Most Venerable Order of St. John of Jerusalem in the Commandery in Central Africa. Mr. Pegrum is Commissioner of the Rhodesia Railways District of the St. John Ambulance Brigade. The Deputy District Commis-

sioner, Dr. J. W. Pickles, has been promoted from Serving Brother to Officer (Brother). Mr. N. L. Collins, Transportation Department and Mrs. L. Ferrett are admitted to the Grade of Serving Brother and Serving Sister respectively.

Mr. G. S. Bingham, formerly Assistant Mechanical Engineer (Works-Railways) becomes Mechanical Engineer (Works-Railways).

Mr. J. G. Bruce, formerly Assistant Mechanical Engineer (Running-Railways) becomes Mechanical Engineer (Running-Railways).

Mr. R. I. D. Arthurton, formerly Assistant Mechanical Engineer (Development-Railways), becomes Mechanical Engineer (Development-Railways).

Mr. I. W. Standring, Assistant Mechanical Engineer (Lifts & Escalators), becomes Mechanical Engineer (Lifts & Escalators).

Mr. Colin Neil MacKay has been appointed Assistant (Public Relations) to the General Manager, Scottish Region, British Railways.

been appointed Chief Mechanical Engineer was born at Rondebosch, Cape Town in 1902. He joined the South African Railways as a Pupil Mechanical Engineer, at Salt River, Cape Town, in 1927. After serving in the Mechanical Department at Pretoria, Durban and East London he was appointed Assistant to the Mechanical Engineer, Salt River, in 1937. During August of that year he became Locomotive Superintendent, East London. He subsequently held appointments as: Research & Test Engineer, Chief Mechanical Engineers Department, Pretoria, 1939; Locomotive Superintendent, Johannesburg, 1942; Chief Superintendent, (Motive Power) Johannesburg, 1945; Inspecting Engineer (Motive Power) Johannesburg, 1946; Assistant Chief Mechanical Engineer (Motive Power) Johannesburg, 1950; and Assistant Chief Mechanical Engineer (Workshops) Pretoria, 1954. Mr. Long became Assistant Chief Mechanical Engineer (Design and Development) 1956.



Mr. F. W. Goring

Stationmaster, Kings Cross, Eastern Region,
1943-58

Mr. F. W. Goring, who, as recorded in our July 4 issue, has retired as Station Master, Kings Cross, Eastern Region, British Railways joined the Great Northern Railway in 1907 as a probationary clerk attached to Kings Cross Parcels Office. In 1912 was appointed clerk in the Superintendent's Office, and from 1915 until 1923 he acted as a Relief Station Master, attached to the Superintendent's office. In 1923 was appointed Station Master, Finchley. Mr. Goring joined the District Superintendent's office, Kings Cross in 1927, and became Chief Trains Clerk in 1937. Three years later he returned to the Superintendent's office, then located at Gerrards Cross, and in 1942 was appointed Senior Passenger Trains Clerk. He was appointed Station Master, Kings Cross, in 1943. Mr. Goring was awarded an M.B.E. in 1945. To mark his retirement and, in recognition of his services to the Norwegian tourist industry, he was awarded Sank Olav's Medalien. A picture of the presentation ceremony, at the Norwegian Embassy in London, appeared in our last week's issue.

THE INSTITUTE OF TRANSPORT

The following have been elected to the Council of the Institute of Transport with effect from October 1, 1958:—

Mr. F. C. Asgill, Vice-Chairman, Stephenson Clarke, Limited; Mr. H. H. Crow, Chairman & Managing Director, Crow Carrying Co. Ltd.; Mr. A. A. M. Durrant, Chief Mechanical Engineer (Road Services), London Transport Executive; Mr. G. F. Fiennes, Line Traffic Manager, Great Northern, Eastern Region, British Railways; Mr. F. Grundy, Chief Traffic Officer, British Railways Central Staff, British Transport Commission; Mr. D. H. F. Joyce, Supplies & Transportation Manager, Shell-Mex & B.P. Limited; Mr. H. E. Osborn, Chief Accountant & Financial Adviser, British Transport Commission; Mr. B. Smallpeice, Managing Director, British Overseas Airways Corporation; Mr. A. E. M. Walter, Head of the International Transport Branch, Ministry of Transport & Civil Aviation; Mr. R. R. Beckinsale (Associate Member), Warehousing & Packaging Manager, United Glass Bottle Manufacturers Limited.

We regret to record the death, on July 8, of Mr. J. F. S. Tyler, M.I.C.E., former Chief Assistant Engineer of the Southern Railway. Mr. Tyler, who was in his 91st year, joined the London & South Western Railway in 1884. From 1885 to 1891 he was engaged as Assistant to the Resident Engineer on main-line widening works, and for the next eight years was employed in the office of the Chief Engineer as General Engineering Assistant. From 1889 to 1904 he was Resident Engineer in charge of various new works, including the Amesbury and Military Camp Light Railway, and the reconstruction of Salisbury Station. He was then for four years Resident District Engineer for the Somerset & Dorset Railway and, from 1907 to 1914, was engaged in the Chief Engineer's office in charge of the technical work. Appointed Principal Assistant to the Chief Engineer in March, 1914, he was subsequently engaged as District Engineer to the Chief Engineer at headquarters. Following the amalgamation in 1923, Mr. Tyler was appointed Chief Assistant Engineer of the Southern Railway. He retired in 1933.

Further appointments have been made to the newly-formed Associated Electrical Industries Limited Heavy Plant Division, managed by the British Thomson-Houston Co. Ltd. Mr. I. A. Ferguson has been appointed Manager, Large Electrical Machine Sales, Mr. P. S. Clayton, Manager, Power Rectifier Sales, and Mr. J. B. Siddaway, Manager, Compressor Sales.

Mr. N. W. Rolfe, Secretary & Chief Accountant, Birmingham & Midland Motor Omnibus Co. Ltd., who was awarded the first Commercial Motor Users' Association Road Transport Research Fellowship for the purpose of studying in the U.S.A. and Canada, methods of organisation of road passenger transport, took up the Fellowship in September last and has completed a report.

Vickers Limited announces the following changes in their Group organisation:—Due to ill health, Mr. E. J. Waddington has been granted leave, until retirement on December 31, as Director of Finance, Vickers Limited and of Vickers-Armstrongs Limited and also from the boards of directors of those companies. His duties as Director of Finance will be assumed by Mr. R. P. H. Yapp. Mr. B. L. Snow has been appointed Sales Manager of Vickers-Armstrongs (Engineers) Limited and a Special Director of that Company, relinquishing his appointment as Sales Director of George Mann & Co. Ltd. Mr. T. Wood has been appointed to the board of George Mann & Co. Ltd. and Sales Director of that company.

Mr. A. A. S. C. Chattey, Chairman of A.C.V. Sales Limited will relinquish his active executive duties on August 1 having reached retiring age. He will be succeeded by Mr. Eric Hollands, who has been appointed Director & General Manager of A.C.V. Sales Limited from that date. Mr. Chattey will continue as Chairman Director of A.C.V. Sales Limited and will retain his seat on the board of the parent company.

Mr. N. H. Bacon, has retired as Superintendent of the Ickles Departments, Steel Peech & Tozer, he is succeeded by Mr. R. Scholey, Assistant Superintendent. Mr. D. R. Baker has been appointed Assistant Ickles Superintendent (Technical) and Mr. D. B. Bray becomes Manager, Heat Treatment Department.



Mr. L. E. Hawkins

Appointed Civil Engineer (General),
London Transport Executive

Mr. L. E. Hawkins, who, as recorded in our June 27 issue, has been appointed Civil Engineer (General), London Transport Executive, is 56. Mr. Hawkins began his railway career in 1921 under Mr. John Miller, then Chief Engineer of the Great Eastern Railway. From 1924 to 1930 he was with the Madras & Southern Mahratta Railway as Assistant Engineer, District Engineer and Personal Assistant to the Deputy Chief Engineer for New Works. He joined the Underground Group in 1930 and was engaged on design and on the execution of works for both rail and road services by contract and by direct labour. He served during the war with the Royal Marines and the Royal Engineers in Britain and N.W. Europe, and was a Lt.-Colonel, R.E., at the time of his release. On his return to London Transport, in 1946, Mr. Hawkins took charge of the design of permanent way, bridges and engineering structures and of the execution of bridge works. He was appointed Assistant Civil Engineer (Structures) in 1951.

Mr. Eric Loram has been appointed General Sales Manager of Small & Parkes Limited.

Mr. E. J. Waddington has resigned as a Director of the English Steel Corporation Limited.

Mr. Andrew M. Brown has been appointed Executive Director of the Plessey Co. Ltd., with special responsibilities as personnel co-ordinator.

Mr. Robert Adkinson, Managing Director, Hamworthy Engineering Co. Ltd., has been appointed Managing Director of William Doxford & Sons (Engineers) Limited.

Mr. William J. Wallace has been appointed Director, International Division, Railway Express Agency, reporting directly to the President.

Mr. A. S. Wood has been appointed Joint Managing Director of Bruntons (Musselburgh) Limited, with the Earl of Balfour, the Chairman, who hitherto has been sole Managing Director.

NEW EQUIPMENT AND PROCESSES



Versatile Vice Mounting

A WORKSHOP bench fixture, the All-Angles Mounting, which enables a vice or jig to be swivelled or tilted to any position and then held firmly is now available.

It is suitable for all makes of vices and the accompanying illustration shows the fitting. The swivelling movement is through 360 deg. and the lock operates in any position. A canting movement is entirely independent of the swivelling movement and operates through 90 deg. A fixed stop prevents further movement and it can also be locked in any intermediate position.

The fitting is constructed in malleable iron and is particularly suited for heavy duty and/or heavy vices. Where used as a vice mounting, if the choice of vice is available it is recommended that the lighter types of vices be used, especially in the larger sizes. This is infinitely better for the

operator as manipulation is so much easier and more rapid.

Various sizes and types are produced; one model has a large top plate for use mainly for quick-action vices, in cases where it is desired to use all three bolt holes for holding the vice to the mounting.

Details of these mountings may be obtained on application to the manufacturer, Charles Winn & Co. Ltd., Granville Street, Birmingham, 1.

Sleeper Spacing Machine

A SLEEPER spacing machine developed by the Railway Maintenance Corporation of Pittsburgh, U.S.A., can be supplied by a firm in this country. This machine, known as the R.M.C. Tie Spacer, corrects poor spacing and slewed sleeper conditions and can be used to increase the number of sleepers per rail.

A set of hydraulic shifting devices, one on each side of the machine, is the basis of operation. While the unit is positioned over the sleeper to be moved, either or both shifting devices are lowered and automatically drop over the head of the rail. When hydraulic pressure is applied to move the tie, all force is taken through the rail anchorage, thereby permitting a relatively light machine.

A sleeper can be moved in either direction parallel to the rail; or one end can be moved forward while pulling the other backward. So long as the ballast is not laid up to the top of the sleepers, they can be moved without raising the track.

The best location for the machine in the surfacing gang is ahead of the jacks and tamping operation as properly spaced sleepers square to the rails are beneficial to operation of a multiple tamper. A central hydraulic ram lifts the machine clear of the rails when it is required to be removed from the track or reversed in

direction. A stand to receive the machine off the track which can be assembled by two men is available.

The standard 4-ft. 8½-in. gauge machine has the following leading dimensions: Length, 6 ft.; height 6 ft. 5 in.; width, 6 ft.; weight, 4,000 lb.; speed range, 13-25 m.p.h.

Further details may be obtained from the manufacturer in U.S.A. or from Beyer Peacock Railway Equipment Limited, Locomotive House, Buckingham Gate, London, S.W.1.

Reversing Starters

A RANGE of direct-to-line reversing starters, incorporating vertical-lift contactors similar to those in the manufacturer's XB and XC non-reversing types, has been introduced. They are designed for starting motors of from 1 h.p. to 12½ h.p.

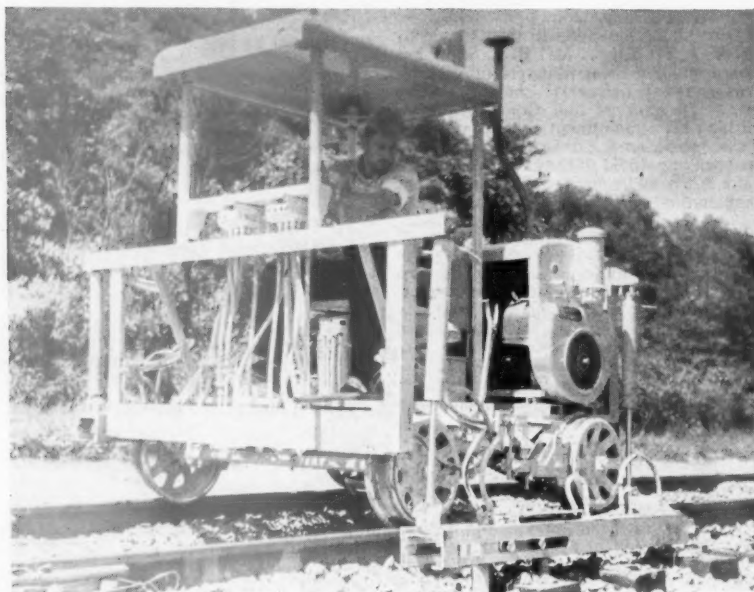


The four-pole forward and reverse contactors are interlocked mechanically so that when either is closed the other is locked open; there is a further electrical interlock through side switches operating in conjunction with each contactor, which prevents the two operating coils from being energised together. Additional side switches for controlling associated circuits can be fitted if required. The triple-pole overload units have adjustable oil dashpot time lags.

Any starter can be supplied with a cam operated double-break, triple-pole interruptor switch capable of breaking the stalled motor current. The 10- and 12½-h.p. sizes have a plug-in mounting which permits removal without disturbing incoming and outgoing cables.

"Forward," "reverse," and "stop/reset" buttons are mounted on the case for local control, or motors may be controlled remotely by push-buttons or pilot switch. An ammeter can be fitted on top of the case if required, and accommodation for control fuses is available inside the starter.

Further details may be obtained from the manufacturer, the General Electric Co. Ltd., Magnet House, Kingsway, London, W.C.2



Mechanisation of Booking Offices at Cardiff, Western Region

(See editorial comment on page 62)



Enquiry and seat reservation office at Cardiff General, in which a Westinghouse Garrard Multiprinter Major machine with 1,194 plates covers many advance bookings



Re-equipped booking office at Cardiff Queen Street, which handles a heavy local traffic, showing Flexiprinter on trolley with 185 ordinary and 45 season ticket blocks



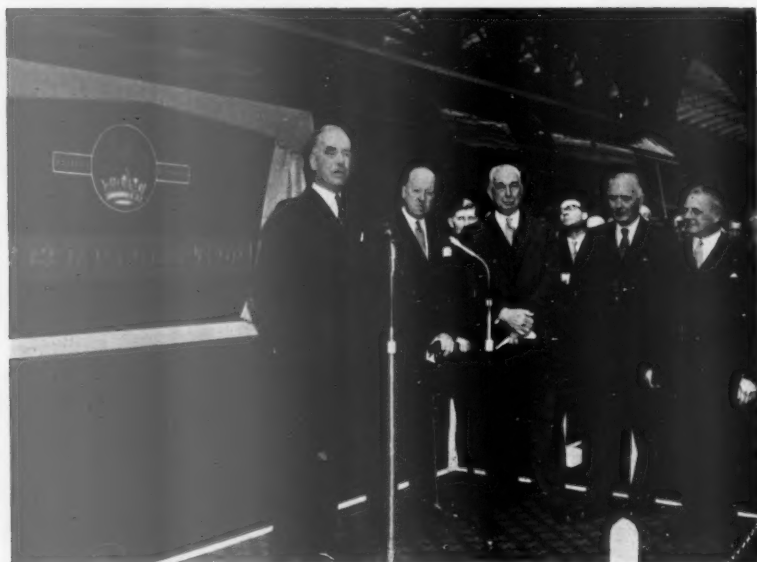
A to L section at Cardiff General; Westinghouse Garrard mobile Flexiprinter (in foreground) deals with peak bookings to Bristol and London



"Valleys" section of Cardiff General booking office, showing part of Flexiprinter installation with 526 ordinary and 16 season ticket blocks

Swindon-Built Type "4" Diesel Naming Ceremony and Demonstration Run

Introduction of 2,200-h.p. locomotive with hydraulic transmission in Western Region



At the naming ceremony: (left to right) Sir Brian Robertson, Mr. K. W. C. Grand, Mr. J. W. Watkins, Sir John Benstead, and Mr. R. F. Hanks

The first main-line diesel-hydraulic locomotive to be constructed in British Railways own workshops has recently completed trials before introduction on the West of England route in the Western Region. This locomotive, No. D800, has been named *Sir Brian Robertson* at the special request of the Chairman and Members of the Western Area Board of the British Transport Commission.

The nameplate on the engine was unveiled on Monday by Mr. K. W. C. Grand, General Manager of the Western Region, at a ceremony at Paddington Station, at which Sir Brian Robertson, Chairman, and Members of the British Transport Commission, the Chairman and Members of the Western Area Board, and other guests were present.

Mr. R. F. Hanks, Chairman of the Western Area Board of the British Transport Commission, in his speech of introduction said that for the Western Region this was an historic occasion. The locomotive was the first main-line diesel express locomotive produced in the Western Region shops at Swindon, the nursery for over 100 years of a famous line of steam locomotives ranging from the old broad-gauge "singles" *Lord of the Isles* right up to the "Saints," the "Stars," the "Castles," and the "Kings," and latterly, as a sort of prelude to change, a good sprinkling of British Railways standard engines.

The new diesel, he pointed out, differed in several important respects from the concepts of locomotive engineers in the U.S.A. where electric transmission was almost universal. The Western Region, he added, in turning over to diesel motive power, always tried to save any weight not necessary for adhesion. The ways to do this seemed to lie in the direction of lighter framing, the use of a high-speed

engine, and hydraulic transmission in place of the generator and motor. In this sort of reasoning and the steps which were taken subsequently to put it into practice they would all acknowledge the understanding, the co-operation and the help of the B.T.C. and its technical advisers.

It would have been so easy, he added, for them to have said, "You just follow the party line and play for safety." However, with the Commission's blessing the hunt started and eventually a highly specialised design by Krauss-Maffei of Germany incorporating two high-speed diesel Maybach engines and two Mekydro hydraulic transmissions seemed to fill the bill almost exactly. "The finished product which you see today weighs rather less than 80 tons and in power output is the equivalent of a 'Castle' at its best."

After stating that all the main components of this type of engine are to be constructed in the United Kingdom in future, Mr. Hanks expressed the gratitude of the Region to the Krauss-Maffei and Maybach companies for their unstinted help and advice, and also to the German Federal Railway for the manner in which it placed at the disposal of the Region its operating experience and data.

Search for Best Design

It was no reflection upon British industry that the Western Region should favour a design evolved on the Continent. Indeed, working for the Commission and British Railways, they would have been failing in their duty if they did not explore fresh avenues of design in a determination to get the very best. Obviously they could not claim yet that this type of locomotive was the best, but it had certainly done very well in Germany and in a good many other countries also and they were confident that mileages between shoppings

would "make our old and faithful steam locomotives look rather silly by comparison."

Mr. Hanks hoped he might be forgiven for blowing Swindon's trumpet; the works staff had always been too modest to do so themselves and gladly conceded pride of place to Crewe or to Derby.

He also paid a tribute to the way in which Swindon Works tackled an exceedingly complex engineering job, mentioning particularly the Drawing Office and the scaling-down operation involved because of the differences in German and British loading gauges and so on. Mr. Hanks congratulated, on behalf of the Area Board and management, the Chief Mechanical & Electrical Engineer, Mr. R. A. Smeddle, and his staff.

Western Area Board Request

He then spoke of the spontaneous wish of the Board and Management that this first Swindon-produced diesel express locomotive should be named after Sir Brian Robertson, Chairman of the British Transport Commission. "The request was not an unreasonable one," he continued, "because here we have modernisation in being and Sir Brian, more than any other living man has been responsible for initiating and pressing on with every phrase of modernising British Railways and giving our nation a railway system second to none in the whole world. And the plan is succeeding with greater rapidity than many people realise."

Mr. Hanks then invited Mr. K. W. C. Grand to unveil the nameplate.

In his reply, Sir Brian spoke of the honour which was being paid to him. Addressing the locomotive, he said, "Do your stuff, and win your spurs. And as you carry my name you had jolly well better behave yourself!"

A bouquet was presented to Lady Robertson by Mr. R. Hobbs on behalf of the Swindon Works Committee.

After the ceremony the locomotive hauled a special train on a demonstration run from Paddington to Reading and back; the schedules of 38 min. down and 39 min. up were easily maintained.

The locomotive, of 2,200 h.p., is the subject of an illustrated article and editorial comment elsewhere in this issue; it has been constructed to the general requirements of the Commission at Swindon Locomotive Works, many features comparatively new to railway engineering practice in this country having been embodied in its construction. It is the first of 33 locomotives of this design to be built at Swindon by the Region.

Those attending the ceremony included the following officers and guests:—

British Transport Commission

Sir Brian Robertson, Chairman; Sir John Benstead, Deputy Chairman; Messrs. J. W. Watkins, H. P. Barker, Members; Major-General L. L. Wansbrough-Jones, Secretary-General; Messrs. T. H. Hollingsworth, Traffic Adviser; J. H. Brebner, Public Relations Adviser; R. C. Bond, Chief Mechanical Engineer; S. B. Warder, Chief Electrical Engineer; A. E. Robson, Chief Carriage & Wagon Engineering Officer; E. S. Cox, Mechanical Engineer (Development); F. Grundy, Chief Traffic Officer; D. S. M. Barrie, Chief Public Relations Officer; C. Barman, Chief Publicity Officer; A. C. West, Chief Constable; W. W. Wood, Chief of Police, Western Area.

Western Area Board

Messrs. R. F. Hanks, Chairman; A. Chamberlain, F. A. Parish, Members; A. H. Curtis Welch, Secretary.

Western Region

Messrs. K. W. C. Grand, General Manager; H. G. Bowles, Assistant General Manager (Administration); A. C. B. Pickford, Assistant General Manager (Traffic); J. R. Hammond, Assistant General Manager (Modernisation); W. G. Roberts, Assistant to General Manager; R. A. Smeddle, Chief Mechanical & Electrical Engineer; M. G. R. Smith, Chief Civil Engineer; A. E. Flaxman, Commercial Officer; C. W. Powell, Operating Officer; H. E. A. White, Running & Maintenance Officer; A. W. J. Dymond, Stores Superintendent; A. W. Woodbridge, Signal Engineer; C. J. Rider, Public Relations & Publicity Officer.

Messrs. C. T. Roberts, Principal Assistant Mechanical & Electrical Engineer; S. A. S. Smith, Manager, Locomotive Works, Swindon; S. O. Ell, Assistant to Chief Mechanical & Electrical Engineer (Loco Testing); J. W. J. Webb, Regional Accountant; R. G. Henbest, Estate & Rating Surveyor; S. G. Ward, Regional Establishment & Staff Officer; Dr. C. T. Newnham, Regional Medical Officer.

Messrs. von Mitterwaller, Krauss Maffei, A.G.; H. Wilmot, Chairman, J. Hadfield, Technical Director, Beyer Peacock & Co. Ltd.; T. A. Crowe, Chairman & Chief Managing Director, North British Locomotive Co. Ltd.; H. T. Chapman, Managing Director, Armstrong Siddeley Motors Limited; A. J. S. Brown, Chairman, J. Stone & Co. (Deptford) Ltd.; H. H. Phillips, Member of the Transport Tribunal; Miles Beevor; G. E. Orton, Former Chief Officer for Public Relations, G.W.R.

this tunnel also the two air shafts have been completed, as has the connecting passage to the existing tunnel, apart from the actual breaking out of the brickwork which will be delayed until nearer the completion of the works.

Earthworks

Apart from excavation to the south of Hadley South tunnel and in the vicinity of Hadley Wood station, the earthworks are practically completed. The works on Hadley Wood station are well advanced. The extensions to the platforms have been completed and the new buildings on the Up platform are in use.

The completion of the whole scheme is planned for May, 1959, and the final stages will involve considerable track possessions for several weeks before the completion date. Certain preliminary drainage works connected with the final link-up will be carried out during possessions in August-September of this year with the object of reducing the amount of work to be carried out in the final stages.

Track laying and ballasting will be carried out by the contractors during January and February, 1959. This refers to the main sections of the work; the sections at each end will be carried out by British Railways staff during the final stages.

The design achieved consists of a central cylindrical tank of the orthodox sealed type for the inflammable mineral oil with two saddle tanks of the lightweight, vented to atmosphere type for the comparatively inert edible oil.

The capacity of the cylindrical tank is 7,200 gal. of mineral oil, against 9,000 gal. for the standard Nigerian Railway tank wagon. It is of welded construction. The two saddle tanks together carry 5,746 gal. of edible oil. They also are of welded construction; they can be removed without disturbing the central tank. An equalising pipe is provided of $\frac{1}{4}$ in. thick, quarter hard aluminium alloy (Al. Mg. 3). Each tank comprises a top and bottom shell welded together longitudinally to enable baffles and stiffeners to be welded in before final assembly.

Cleaning

Perforated cleansing pipes run the whole length of the tanks. Six manholes at the top of each tank and six side inspection covers are provided. The discharge pipes have distinct flange dimensions to prevent incorrect discharge connection between the two kinds of oil.

The underframe is 42 ft. long and of welded construction. Hoffmann roller bearing axleboxes have been fitted.

The illustration on the right shows inspection by (left to right): Sir Ralf Emerson, Chairman, Nigerian Railway Corporation; Mr. R. K. Innes; and Mr. G. H. Binnie, Chief Mechanical Engineer, Nigerian Railway.

Progress on East Coast Main Line Widening Works

The driving of Hadley North tunnel on the Great Northern main line of the Eastern Region was completed as programmed at the end of 1957. In Potters Bar tunnel the shield reached the north end during last month and thereafter driving started southwards on the third tunnel, Hadley South. The shield had been erected here some months in advance and preliminary work put in hand so that it was possible to go right ahead with the concrete lining when the men were freed from the Potters Bar tunnel.

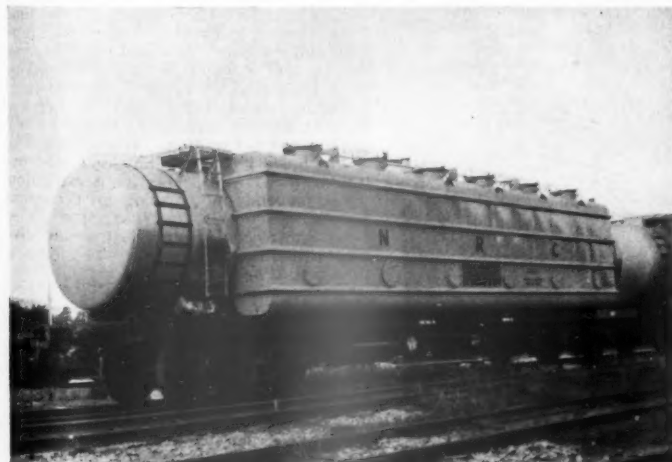
Work is proceeding on completion of the Potters Bar tunnel, namely concrete fill in the invert and other incidental works, including the masonry at the portals. In

Dual-Purpose Tank Wagons in Nigeria

Ten dual-purpose tank wagons have been supplied by the Société Métallurgique d'Enghien St. Eloi to the 3 ft. 6 in. gauge Nigerian Railway to the requirements of Mr. R. K. Innes, the Chief Mechanical Engineer, and now General Manager, Nigerian Railway.

They are designed for movement of high flash-point mineral oils from Lagos to Kano, 700 miles, and edible groundnut oil in the reverse direction. No wagons existed suitable for immediate alternate conveyance of mineral and edible oils. Consideration was given to plastic bags which could be inserted in a tank for carrying edible oil southbound; but no bag could be found which was impervious to either kind of oil and otherwise suitable for handling; and expendable bags were not practicable.

STEEL OUTPUT REDUCED.—Steel and pig-iron production is now reported to be more than 10 per cent below the rate a year ago. According to the Iron & Steel Board, steel production in June averaged 373,600 tons a week compared with 418,700 tons a week in June of last year, while the production of pig-iron, at 243,200 tons a week last month, compares with an output of 274,600 tons a week 12 months earlier. The reduction in deliveries to the home trade is understood to have been caused partly by a fall in the demand for steel, more particularly for building, and partly because consumers have been drawing on their stocks of finished steel. Deliveries to both home and export markets are less than last year.



Nigerian Railway wagon built by Société Métallurgique d'Enghien St. Eloi, with cylindrical tank for mineral and panniers for return edible oil traffic



Sir Ralf Emerson, Mr. R. K. Innes, and Mr. G. H. Binnie inspecting the dual-purpose wagon

Automatic Train Washing Machine at St. Leonards

A mechanical washing machine, incorporating a number of features new to Southern Region train-washing plants, has been built at St. Leonards West Marina, near Hastings. It is located at the maintenance depot sited at St. Leonards for servicing the Southern Region multiple-unit diesel-electric sets which operate on the London-Hastings (via Tunbridge Wells) line. An important feature of the plant is the automatic control system by which it is operated as a train approaches and passes through. This control system is the first of its kind on British Railways.

The washing plant is similar in structure and mechanical principles to those which have been installed on the Region, and the former Southern Railway, since the 1930s, such as those at Ramsgate and Bournemouth West.

The basic working principle is that a train passes at 3 m.p.h. between two rows of revolving shafts to which are attached a large number of strips of cloth. Water under pressure is spread on the cloths and then directly on to the coaches to rinse them.

Improvements

Important improvements include arrangements for completely automatic operation initiated by the passage of a train. In addition, a filtering and flushing system enables the water storage tank to be installed on the machine structure and has resulted in a cheaper foundation construction. The water draining from the train on the concrete apron is filtered and then directed into a sump. When the level in this sump reaches a pre-determined point a pump is started automatically and returns this filtered water to the high level storage tank.

Provision is made for the plant to be set in operation by the automatic mechanism, mentioned above, or by normal control.

The accompanying illustration shows the general appearance of the structure. Of the 146 vehicles, 116 are serviced at

West Marina shed during each period of 24 hr. and rotate for cleaning purposes along with 30 others berthed at Hastings, Ore and Tonbridge. The total provides a maintenance pool of 26 vehicles.

Most of the cleaning is undertaken during the night for which a staff of 24 is engaged. From 8 a.m. to 4.30 p.m. five other carriage servicing units serve the remaining trains.

Staff and Labour Matters

Railway Shopmen's Wage Claim

The Executive Committee of the Confederation of Shipbuilding & Engineering Unions, at their monthly meeting on July 10, rejected the offer of the British Transport Commission to increase the rates of pay of railway workshop staff by 3 per cent. The executive committee decided to negotiate for a bigger offer without attached conditions. It is understood that the official reply of the employees' side of the Railway Shopmen's National Council will be given to the Commission at the meeting of the council which has been arranged for July 21.

N.U.R. Annual Conference

At a private session, delegates at the N.U.R. Annual Conference on July 9 at Exmouth criticised the executive of the union for accepting the recent 3 per cent wage increase for railway salaried and conciliation staff, but after a three-hour debate it was decided not to submit a new wage claim but to leave future wages policy in the Executive's hands.

The delegates unanimously carried in public session a resolution expressing great concern in regard to staff reductions in railway workshops and it was alleged that a considerable amount of work, capable of being undertaken in British Railways workshops, was being let to private contractors.

The Executive were asked to do all in their power to ensure that railway workshop capacity was used to the full extent

and to negotiate a redundancy agreement to provide protection for railway shopmen.

London Busmen's Wage Dispute

The deadlock in the dispute over the wages of London busmen still continues. No agreement was reached after two lengthy meetings at the Ministry of Labour on July 11, when the busmen's leaders and representatives of the London Transport Executive separately saw Sir Wilfred Neden, Chief Industrial Commissioner, at the Ministry of Labour & National Service.

The Transport & General Workers' Union representatives considered that the outcome of the joint review on wages of country busmen and other grades excluded from the original Industrial Court Award was not in accordance with the terms of settlement of the strike. They considered that the 5s. offered to country busmen is not a favourable offer compared with the 8s. 6d. awarded to central London busmen. They also contended the offer of 7s. 6d. to Green Line coach drivers conflicts with the "Prime Minister's formula" which proposes that the coach drivers should be included in the central London settlement. It is contended that the 5s. a week increase offered for operating staff and maintenance men was simply a 3 per cent offer in line with the settlement made for railwaymen and was not based on a review. Moreover, it did not offer a further review later as has been offered in the case of the railwaymen.

The position now is that the T.G.W.U. will call a joint delegate conference of all London busmen to consider the position.

Parliamentary Notes

Rail Facilities to and from Airports

Mr. William Teeling (Brighton, Pavilion—NC.), on the motion for the adjournment in the House of Commons at 2.11 a.m. on July 3, raised the whole question of passenger traffic facilities to and from the London and Gatwick Airports.

Mr. G. R. H. Nugent, Joint Parliamentary Secretary to the Ministry of Transport & Civil Aviation, spoke first of the road projects for service for the London Airport, and said that on the question of a rail link between London Airport and central London, the B.T.C. had worked out an outline scheme for a conventional rail link from Victoria to London Airport via Clapham and Feltham. It would be an express service, and it would involve the building of a good deal of extra line. The cost, including underground work at London Airport, was estimated to be between £16.5 million and £18 million. This scheme was not included in the Commission's modernisation programme, and its construction would depend on its being an economic proposition on its own account. The Government could not visualise any element of load or subsidy in it. The journey time would be 22 min.

Three Monorail Schemes

As to the monorail, Mr. Nugent stated that there are now three groups interested in promoting the monorail link between Central London and London Airport. They had all been invited by the Ministry to submit detailed schemes showing methods of construction and operation, sources of finance, methods of meeting safety standards, etc. The Ministry are now awaiting their response submitting their schemes in considerable detail.



General view of automatic mechanical train washing plant at St. Leonards West Marina

When they had received these schemes, the Ministry would compare them, and compare them with the picture of the conventional railway. In the event of approval in principle at this stage of the monorail link, this new form of transport, it would, of course, be necessary to have extended field testing, which would be needed to establish the safety factors involved in monorail travel.

The three groups were:—

(a) The one headed by the Member for Maidstone (Sir Alfred Bossom), the group combined with the German interests. The principle of the scheme was a coach which travelled on a smooth topped reinforced concrete rail, and it had the special virtue that the coach is interchangeable, to travel either on the rail top or to run on the ground surface as well.

(b) The International Monorail Limited system. The coach was suspended from an overhead rail. He was interested to hear Mr. Teeling say that the figure of £15 million was put on that scheme.

(c) Mr. Wolstenholme's scheme for a lightweight railway running in a geodetic tube framework. The journey by the monorail system was estimated to be 15-20 min.

Operational Problems

"As to the prospect," added Mr. Nugent, "it is most difficult to say. I paid a visit to Cologne to see the full scale working model there. It runs for about 2 km. on a rail. My impression was that that was an idea of great interest and promise. It certainly works. There is no question about that, but what has not yet been done is to develop this monorail scheme as a full-scale commercial operation, and there are obviously huge difficulties in doing that.

"There is," he went on, "the attraction to us in the Government that, apart from providing a rapid and comfortable link between London Airport and Central London, this project would be financed by private money, and would be no burden upon public funds. But it is still in the future. We shall know shortly what they can put up, and then the Minister will decide whether we can entertain one of them or more in principle."

Gatwick Railway Service

Of the rail link for the Gatwick Airport, Mr. Nugent said:

The Gatwick rail link utilised the main Brighton line. It has two stops on the 26½ miles to London, and covers the journey in 40 min. The fast service runs half-hourly. There are also two further slow trains per hour which stop at Gatwick Airport. It is apparently just not possible to run an express train from Gatwick to London in anything like economic circumstances.

The volume of traffic using it simply would not justify an express train, and at present, with that very active line, it is necessary to have these two stops to discharge the passengers using it. The new station which adjoins the airport has been generally approved by all who have seen it, and the new airport straddles the main road. At present, passenger traffic from the airport is light, and the B.T.C. and the B.E.A. will watch closely the future development of passenger traffic there to ensure that there are adequate services to meet passenger needs as they develop. I have no doubt that the offer which the Minister made that visitors who arrive at Gatwick might stay the night in Brighton will be an additional attraction to go to Gatwick rather than to London Airport.

Contracts and Tenders

Construction of four-mile colliery branch and signalling equipment for Eastern Region

The Eastern Region of British Railways has placed the following contracts:—

Thomas Fletcher & Co. Ltd., Mansfield: construction of a 4-mile branch to Bevercotes Colliery

Metropolitan-Vickers-G.R.S. Limited: supply and installation of signalling equipment for East Coast main line widening between Greenwood and Potters Bar; and supply and installation of signalling equipment and automatic train control equipment, in connection with Barking Flyover scheme

Henry Lees & Co. Ltd., Motherwell: construction of one 200-ton electrically-operated locomotive cooling plant at Mexborough.

Coulson & Son Ltd., Cambridge: construction of superstructure to smalls area workshop, construction of latrine unit and provision of connecting drainage between existing septic tanks at central permanent way depot, Chester-ton Junction

Stanley J. Hails Limited, Ipswich: cleaning and painting of station buildings, offices, goods yard, motive power depot, point rodding, signals, signal-boxes at Ipswich Station and between Ipswich Tunnel (country end) and fitters' workshops at country end of Ipswich Goods Junction Signalbox.

Ganz & Co. Ltd. Wagon Works, of Hungary, has received an order to supply the Polish State Railways with 70 diesel railcars of 600 h.p. The contract signed at the recent Poznan Fair is to be completed by 1959-60.

British Railways, North Eastern Region, has placed the following contracts:—

W. Fairburn Limited, Hull: electrical installation, Hull Botanic Gardens Diesel Maintenance Depot

S. Maclean & Son Ltd., Newcastle: ventilation, telephone exchange, York Headquarters Offices

Northern Tubular Buildings Limited, Newcastle: supply of steelwork, Simon-side Wagon Depot

Tarslag Limited, Stockton-on-Tees: supply of prestressed concrete beams, Leeds Neville Hill Diesel Depot

Brush Electrical Engineering Limited, Loughborough: M.V. switchboard, substation, Newcastle Heaton Shops

Simon Hydraulic Machinery, Dudley: two Simon hydraulic platforms, Chief Civil Engineer's Depot

Noble & Lund Limited, Gateshead: cold circular saw, C. & W. Engineering Development Unit, Darlington Faverdale Works

Ormerod Shapers Limited, Hebden Bridge: 24-in. shaping machine, C. & W. Engineering Development Unit, Darlington Faverdale Works

John Thompson (Wilson Boilers) Limited, Glasgow: one horizontal oil-fired boiler, Heaton Carriage Sidings.

The British Transport Commission has placed a contract with Easco Electrical (Holdings) Limited for the design, supply, and installation of a public address system for passenger announcements at Grimsby Town Passenger Station.

The Scottish Region of British Railways has placed the following contracts:—

McKean & Co. (Glasgow) Ltd., Glasgow: demolition, foundations, walls, drainage, etc., Ladyburn Motive Power Depot, Greenock

Tilghman's Limited, Altrincham: provision of shot blasting machine, Cowlares Works, Glasgow

Whatlings Limited, Glasgow: remedial work on sea wall, Newton-on-Ayr Blackburn (Dumbarton) Limited, Dumbarton: earthworks, foundations, drainage, and so on, Sighthill new goods station, Glasgow

Peter Thaw & Sons, Glasgow: erection of electrical sub-feeder station, Finnieston

Crowley Russel & Co. Ltd., Glasgow: foundations, inspection pits, road works, and so on, Hyndland rolling stock maintenance depot

Standard Telephones & Cables Limited, London: cabling of telecommunications and supervisory circuits, Airdrie/Helensburgh line and associated branches

Metropolitan-Vickers-G.R.S. Limited, London: provision of electric colour-light signalling, Kelvinhaugh/Dalmuir Park via Clydebank Central.

Tenders have been requested for the construction in Argentina of 280 diesel-electric locomotives, 80 diesel engines for these, supplied by Fiat of Turin, are already in the country; the remaining 200 will be built locally.

The Special Register Information Service, Export Services Branch, Board of Trade, has received calls for tenders as follows:—

From Iraq:

Signalling and interlocking equipment for standard gauge crossing stations.

The issuing authority is the Iraqi State Railways. The tender No. is IRS/C/41/51. Tender documents may be obtained by bona fide tenderers or their representatives from the Directorate-General of Railways, Baghdad West, on payment of a fee of IDs 10 per set. This fee is not returnable. Tenders must be accompanied by a deposit of IDs, 1,040. Local representation is not essential. The Board of Trade reference is ESB/17327/58.

From South Africa:

170 flat bottom rails, 30 lb. per yd. in 24-ft. lengths
350 fishplates
700 fishbolts
1,020 steel sleepers.

The issuing authority is the Department of Water Affairs. The tender No. is W.28 of 1958/59. Bids should be sent to the Chairman, Union Tender & Supplies Board, P.O. Box 371, Pretoria. The closing date is July 24, 1958. Local representation is essential. The Board of Trade reference is ESB/17271/58.

1 prototype direction box, complete in accordance with specification Auto 36/1958

52 direction boxes complete, in accordance with specification Auto 36/1958

5 sets of spare components for direction boxes, but excluding the housings and the anti-friction bearings.

The issuing authority is the Stores Department, South African Railways. Bids

in sealed envelopes, endorsed "Tender No. F.7414: Direction Boxes" should be addressed to the Chairman of the Tender Board, P.O. Box 7784, Johannesburg. The closing date is August 8, 1958. Local representation is essential. The Board of Trade reference is ESB/17219/58.

Further details regarding the above tenders, together with photo-copies of tender documents, can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1.).

The Special Register Information Service, Export Services Branch, Board of Trade, advises postponement of closing dates of two tenders for India. These were circulars TEN/33099 and TEN/33099A dated June 20 and 25 respectively and were concerned with diesel shunting locomotive, power winch, fork lifter, loader/shoveller, diesel tow-cars and heavy-duty motor trucks.

The Branch has been informed that the closing date for the receipt of bids is now July 21. The Board of Trade reference is ESB/15433/58.

Notes and News

Installation of A.T.C. in London Midland Region.—Work on the ground and signalling equipment for the introduction of A.T.C. on the British Railways, London Midland Region, main line out of Euston is going forward. During the current year it is expected that the 63 miles of main line from Euston to Blisworth will be completed.

Visit to East Africa by B.C.K. Railway Officers.—The Chief Engineer of the Compagnie du Chemin de Fer du Bas Congo au Katanga, Monsieur C. Dermond, and his Assistant, Monsieur Grogmard, have been visiting East Africa to study various civil engineering projects on E.A.R. & H., before proceeding to Rhodesia and South Africa on similar missions. The accompanying illustration shows, at E.A.R. & H. headquarters at Nairobi: (left to right)

Messrs. J. M. Kesson, Acting Chief Engineer, E.A.R. & H.; C. Dermond; J. R. Farquharson, General Manager, E.A.R. & H.; and Grogmard. Mr. H. W. Stevens and Mr. E. Hudson, General Manager and Chief Mechanical Engineer respectively of the Nyasaland Railways, have been visiting E.A.R. & H. en route to Madagascar.

Sir Brian Robertson in N.E. Region.—On a recent tour in the North Eastern Region of British Railways, Sir Brian Robertson, Chairman of the British Transport Commission, visited the signalbox now under construction at Newcastle Central. He was accompanied on this occasion by Mr. T. H. Summerson, Chairman of the North Eastern Area Board; and by Regional officers: Messrs. A. Dean, Chief Civil Engineer; A. F. Wigram, Signal Engineer; F. C. Margetts, Assistant General Manager (Traffic); M. G. Burrows, Chief Mechanical & Electrical Engineer designate; also by Area traffic and other officers.

Electrification Progress on L.M.R. Styal Line.—With completion of the overhead electrical equipment on the Styal line, between Wilmslow and Mauldeth Road stations, the London Midland Region Crewe-Manchester main line electrification programme enters a further stage. The equipment is now undergoing static testing and this will be followed, later in the year, by the energising of the overhead equipment, trial running of electric trains and locomotives, and training of drivers. Conversion of the line from Manchester to Crewe is scheduled for completion by the end of 1960. Of the 4,500 foundations to be installed for the supporting masts for the overhead equipment, 2,144 have been completed; more than 1,400 complete overhead structures have been erected out of a total of 6,000. Heaton Norris feeder station and East Didsbury track section cabin are nearly complete and a further cabin at Wilmslow is under construction.

Economy Cuts in Malayan Train Services.—The operating revenue of the Malayan Railway in May was \$(M.)3,200,000 lower than for the same month last year; goods

traffic was lower by 90,000 tons. The management has stated that it hopes to be able to achieve equilibrium without having to make reductions in staff. Train services have been modified to meet the situation and maintenance has been cut to the minimum necessary for operational safety. During the first five months of 1958 the Malayan Railway has shown a deficit of more than \$(M.)2,600,000. Unless there is an improvement, the loss at the end of the year might reach \$(M.)7,000,000, and the railway might not even cover operating costs.

Glasgow-Eastbourne Car/Sleeper Train.—The new Glasgow-Eastbourne car/sleeper train referred to on page 755 of our June 27 issue accommodates 20 motorcars and 84 passengers.

The Downward Trend of Freight Train Traffic.—In the four weeks ended May 18, merchandise accounted for 43 per cent of the decrease in British Railways freight traffic from the 1953 ton mile volume, and not 53 per cent, as was printed in error on page 38 of last week's issue.

Road Casualties in May.—There were 4,393 more casualties on the roads of Great Britain in May this year than in May, 1957. The killed numbered 466, an increase of 21, and the seriously injured 6,248, an increase of 1,025. The number of slightly injured rose by 3,347 to 20,947, making a total for all casualties of 27,661, an increase of nearly one-fifth. Over the country as a whole the Road Research Laboratory estimates that traffic on main roads increased by 25 per cent compared with May, 1957.

Further "Programme Machines" on London Underground.—A further stage in the conversion to completely automatic signalling of junctions on the sections in central London of the L.T.E. Northern Line came into operation on June 14, when "programme machines" similar to those already working at Kennington were brought into use at Camden Town. The machines carry out all signalling operations required to work the 1,200 trains a day on the Northern Line over their various routes and to their different destinations. The first were brought into operation on January 26 at Kennington, and a further installation will follow at Euston later in the year. The machines will then handle all Northern Line trains through the Kennington, Camden Town, and Euston sections. Signalmen will continue to control trains on the outer sections of the line. The apparatus was described in our issue of December 13, 1957, and the installation at Kennington in that of January 17 last.

Longer Trains for Epping-Ongar Service.—More seats have been made available for passengers by the Epping-Ongar service on the L.T.E. Central Line; one of the two-car shuttle trains running on this six-mile section has been lengthened to three cars and the second shuttle train is being similarly lengthened. The additional cars are trailers, built in 1927 by the Metropolitan-Cammell Carriage & Wagon Co. Ltd.; they seat 48, and have been running elsewhere on the Central Line. In preparation for transfer to the Epping-Ongar section they were modified at Acton Works; the alterations included the drawgear and the train wire connection boxes and inter-car air hoses. Lighting circuits were completely re-wired to enable the lamps to be supplied at low voltage, as in the 1938



Mr. J. R. Farquharson with Mr. J. M. Kesson and officers of the Bas Congo-Katanga Railway on a visit to East Africa

tube stock, and the door controls and associated wiring were altered. The motor cars for the special two-car shuttle trains were built in 1935-36, also by the Metropolitan-Cammell Carriage & Wagon Co. Ltd., as part of an order for 24 experimental motor cars, the forerunners of the well-known 1938 tube stock.

Overnight Transit to Liverpool Docks for Scottish Exports.—In furtherance of the policy of extending express freight services, British Railways, Scottish Region, introduced on July 14 an "export express service" from stations in the Dundee, Edinburgh, Glasgow and Perth districts to Liverpool Docks. The new service, for full wagonloads of shipment traffic, ensures an overnight rail transit to Liverpool; wagons are available next morning for immediate delivery to ship.

Increased Sales by J. Stone & Co. (Holdings) Ltd.—Financial results for J. Stone & Co. (Holdings) Ltd., for the year ended December 31, 1957, show increased sales mainly attributable to the activity in the works of subsidiary companies. The level of sales was 10 per cent higher than in 1956. The ordinary dividend has been increased from 16 to 18 per cent in respect of 1957. It is not expected, however, that the same group profit will be achieved in the coming year as for 1957, although probably there will not be any material reduction.

Day Trips via Newhaven/Dieppe.—The first no-passport excursion from Victoria to Dieppe since the war will be run by the Southern Region on July 23—the first Newhaven-Dieppe day trip since 1939. A special steamer will give trippers the maximum possible time in France. Passengers will leave Victoria at 8.24 a.m. arriving at Dieppe at 1.30 p.m., to leave more than four hr. later, reaching Victoria just after 11 p.m. Passengers with passports can book in advance at Victoria or through agencies. Those who wish to use the special identity cards must obtain them at Victoria the day before the trip. The return adult fare from London is 49s. 6d. Connecting trains are being run from Sussex coastal towns to Newhaven, where passengers can obtain identity cards at the harbour before embarking. This excursion will be followed by a similar one on August 6.

New Stock for Metropolitan Line.—The London Transport Executive has prepared provisional designs for the new cars to be ordered at a cost of more than £5,000,000 for the Metropolitan Line services to Amersham, Chesham, and Watford. The stock is expected to enter service in 1961, replacing the present electric and steam-hauled compartment stock. Each train will consist of four driving motor and four trailer cars, and will be 431 ft. 6 in. long over couplers. The eight cars will be arranged in two units each consisting of a driving motor car, two intermediate trailers, and another driving motor car. Auto couplers will be fitted at the outer ends of each four-car unit. Bodies will be of unpainted aluminium brought out at solebar level to the full permissible width of 9 ft. 8 in. and rising to waist level before the tumble-home of the sides commences. Bogies will be fitted with rubber suspension. Two prototype motor bogies for the new stock are under construction at Acton Works and will be tested in service. The stock is being designed at the Acton Works of London Transport under the direction of

Mr. A. W. Manser, Chief Mechanical Engineer (Railways); the design has not yet been finalised.

Greenwood & Batley Limited Results.—The results for the year ended March 31, 1958, for Greenwood & Batley Limited show a net profit of £124,293 compared with £114,705 for the previous year and dividend 20 per cent. (17½ per cent). Current assets are £1,514,857 (£1,414,601), compared with liabilities £311,821 (£281,708). The capital reserve is £197,944 (same), revenue reserves £669,177 (£588,990) and future tax £108,800 (£101,800).

Proposal to Reduce L.T.E. Central Bus Services.—London Transport proposes to make a nine per cent cut in its bus services in the autumn. It also intends to close three garages, at Clapham, Old Kent Road and Putney Bridge. The reduction in service would be achieved by withdrawing or curtailing 19 of its central bus routes on August 20. The L.T.E. has given an assurance that there would be no redundancy among its drivers and conductors, and has stated that any redundancy on the maintenance side would be discussed with the union concerned.

Road-Rail Competition in East Africa.—The General Manager of East African Railways & Harbours, Mr. J. R. Farquharson, stated earlier this week that it was estimated that the system lost £600,000 of freight revenue in the past 12 months because of growing competition from road haulage. The more profitable traffic was passing to haulage concerns which were growing more numerous as the East African road systems improved. Meanwhile, he pointed out, the railways were carrying agricultural produce, on which the economy of the territories was based, at low and often uneconomic rates. E.A.R. & H. intended, however, to proceed with plans for the purchase of diesel-electric locomotives, for which tenders had been requested under the Loan Act of 1957.

Promoting Residential Traffic.—The recent acceleration by the Great Eastern Line of British Railways, Eastern Region, of business trains on the Clacton to Liverpool Street line is thought likely to encourage more people to reside at Clacton. The Eastern Region accordingly has installed a display unit at Clacton Station which has as its theme "fast trains and cheap fares." The main feature of the display, as shown

in the accompanying illustration, is an enlarged photograph of the "Essex Coast Express" hauled by a "Britannia" class locomotive; this links wire impressions of Clacton pier on one side and St. Paul's Cathedral on the other. The slogan "Come back to the sun at Clacton" is emphasised by a copper sun shining over Clacton pier. Designed by the display staff of the Public Relations & Publicity Officer, Eastern Region, the work was executed by Jan Kepinski.

Metropolitan Railway Surplus Lands Co. Ltd.—Gross rents of the Metropolitan Railway Surplus Lands Co. Ltd. for the year ended March 31, 1958, increased by £71,230 to £393,078 and net income from properties by £41,714 to £291,173. As a result group profits before taxation rose by £47,952 to £305,527 and, after providing for taxation, net profits amounted to £122,529, compared with £98,988 in the previous year. A dividend of 7½ per cent has been recommended against 6½ per cent last year, which leaves £75,400 to be carried forward.

Trading Loss Forecast for North British Locomotive Co. Ltd.—Stockholders of the North British Locomotive Co. Ltd. are informed that trading in 1958 will show a loss. In April, Mr. T. A. Crowe, Chairman of the company, stated that if nothing unforeseen occurred it was confidently anticipated that with an increased output, the company would again be earning a profit. Difficulties, it is now stated, have been experienced in building up production of the higher-powered N.B.L.-M.A.N. diesel engines and N.B.L.-Voith transmissions, which have delayed the completion of locomotives. It is felt that these difficulties have now been largely overcome, but the reduced output of locomotives this year will make it impossible to absorb the overhead expenses.

Scottish Region Mobile Sales and Information Office.—The first mobile sales and information office built for the Scottish Region, now in service, is intended primarily for publicising facilities and to be used at agricultural shows, exhibitions, and so on, throughout the Region. The main central compartment serves as a public office and is extended in size by opening rigid flaps upwards, downwards, and sideways to give a platform for the public outside the counter, which is enclosed by solid walls on all but the entrance side. Access is provided by de-



Display unit to promote residential traffic at Clacton, Eastern Region, featuring the "Britannia" class 4-6-2 locomotives which haul the "Essex Coast Express" and other fast trains to and from Liverpool Street

tachable steps. Two complete systems of lighting and heating are fitted. Calor gas and electric from a mains connection. The ticket cabinet is portable and is removed each evening. Washing facilities are available, running water being provided from a storage tank carried underneath. The vehicle was built to the requirements of the Scottish Region on a Scammell six-ton drop framed trailer by A. C. Penman Limited, Dumfries. The unit is drawn by a six-ton tractor.

Davey, Paxman & Co. Ltd. Results.—The financial results for the year ended March 31, for Davey, Paxman & Co. Ltd., show that the trading profit was £584,365, which compares with £428,187 for the previous year. After depreciation of £172,796 (£177,852), to increased cost of plant replacement £20,000 (same), loan interest £12,500 (nil), profits tax £48,000 (£42,500), income tax £203,559 (£155,000) and tax equalisation credit £5,500 (£7,800) the net profit is £197,863 (£130,488). General reserve is allocated £100,000 (£40,000) and £153,523 (£136,160) is brought forward.

Prospects for W. & T. Avery.—Unless there is an early change in trading conditions, the results of W. & T. Avery Limited for 1958-59 are not likely to be up to the level of 1957-58. This is stated by the company's chairman in his statement on the financial results for the year ended March 31. Group net profit for the year is £1,083,932, compared with £1,095,001 for the previous year. The dividend is maintained at 15 per cent, and a one-for-two scrip issue is proposed. Net current assets have expanded from £5,064,312 to £6,060,378 and net assets are £9,457,721 (£8,562,367). There are commitments of £275,000 (£115,000).

International Metallock Conference.—Each year a conference of delegates from the member companies of Metallock International Association Limited is held in the home country of one of the members. The 1958 conference was held in Italy, the home of Metallock (Italiana) S.A. The venue of the conference was Venice and was attended by delegates from eighteen countries from a total of twenty-eight in the Association. The controller of the Metallock International Association Limited is Major E. C. Peckham, founder and chairman of Metallock (Britain) Limited, Grand Buildings, Trafalgar Square, London, W.C.2, at which address is also the headquarters of the International Association.

Census of Road Traffic during Bus Strike.

—A big increase in the total number of cars and other road passenger vehicles coming into Central London during the bus strike, but with numbers actually carried far below the normal level when buses are running, is a main conclusion of a special London Transport census. This was carried out between 7 and 10 a.m. at 54 entry points to the Central Area over the first four weeks of the strike. Before the strike, 70,000 road passenger vehicles of all kinds including 6,000 buses came into Central London daily between 7 and 10 a.m. In the strike, this number rose to about 117,000. Despite this increase, and with all the buses off the road, the number of people carried in by road was less than 60 per cent of normal—200,000 instead of 350,000. Normally 260,000 or nearly three-quarters of the 350,000 travel up by bus to work in Central London every

day. The number of people per car coming into Central London increased during the strike to a surprisingly small extent. Normally the average load is 1.5 persons per car; during the strike it rose only to 1.9.

Butterley Co. Ltd. Dividend Policy.—The board of the Butterley Co. Ltd. states that the company has in its capital reserve £1,680,938, which represents in the main the undistributed balance of capital profit remaining on the sale of its colliery interests. If the company distributes this sum it will be free of tax in the hands of shareholders. The sum is not available in cash, but is represented by assets employed in the business. It is felt to be in the best interests of shareholders to continue to make capital distributions by way of dividend as has now been done for some years. It is proposed to put to reserve each year, out of profits, an amount at least equivalent to that paid out by way of capital dividend; by this means reserves will be maintained.

Export Achievements of South Wales

Switchgear Limited.—At a luncheon after Lady Pascoe had opened new sports fields at the Blackwood (Mon.) works of South Wales Switchgear Limited, on July 11, the Chairman, Sir John Pascoe, commented on the expansion of the company over the 18 years of its existence. Starting with some 25 workpeople, the company now employs about 1,600 workpeople. He also described how the company was competing against firms in the U.S.A., and continued, "To show you where this country stands in the matter of competition with the U.S.A., it is worth remembering that this small company, besides competing at home against giants in its own field, was the first to break into the United States in the 33,000-V. switchgear market. Not only that, but we succeeded in winning back for this country the Brazil business which had previously been lost to the U.S.A." "These achievements," he added, "are the achievements of a free-enterprise concern."

Railway Stock Market

News from the Middle East dominated sentiment in stock markets at the beginning of the week, and there was an easier trend in share prices. Selling was not heavy, but on the other hand, buyers showed considerable caution, and main attention centred on British Funds, which were again higher on balance because of continued hopes of a further reduction in the bank rate. Another reason for caution has been the view that the more difficult conditions in export markets are not likely to be followed by expansion until next year, and that meanwhile important moves to this end may be necessary by both the U.S. and Britain through the World Bank. At home latest indications are that lower profit margins and increased competition are still the general experience, and that it will not be until the autumn that the benefits of the major reduction in the credit squeeze and cheaper money become apparent.

Despite the easier trend in stock markets, foreign rails were generally quite well maintained, though on the other hand, the amount of business was so small quotations were scarcely tested.

Canadian Pacific, exceptionally, showed their usual activity, but at \$50 were \$14 lower as compared with a week ago, while the preference stock eased fractionally to

52, but the 4 per cent debentures gained a point at 66½. White Pass shares eased from \$13½ to \$13.

Mexican Central "A" bearer debentures were a good feature, having strengthened afresh from 69½ a week ago to 71. Chilean Northern 5½ per cent debentures changed hands again at 37½. Costa Rica ordinary stock at 16, and business around 74 was recorded in Guayaquil & Quito assented bonds. Antofagasta ordinary and preference stocks have been maintained at 15 and 29½, and the 5 per cent (Bolivia) debentures marked 95.

United of Havana second income stock held its recent improvement to 7, while San Paulo Railway 3s. units were again quoted at 2s.

West of India Portuguese capital stock has again changed hands at 78 and the 5 per cent debentures marked 67½.

Emu Bay 5 per cent debentures transferred at 25. Nyasaland Railways shares changed hands around 11s. 4½d.; the 3½ per cent debentures were again 67½.

There were small mixed movements among shares of locomotive builders and engineers. Wagon Repairs 5s. shares at 11s. 6d. reflected the rise in the dividend on the larger capital to 18 per cent, an increase equal to 2 per cent. On the other hand, North British Locomotive have fallen from 12s. 10½d. a week ago to 11s. 4½d. under the influence of the chairman's warning about results in the current year. G. D. Peters were again 22s. 6d. but in other directions, Gloucester Wagon 10s. shares eased to 14s. 6d. Charles Roberts 5s. shares at 8s. 1½d. and Beyer Peacock 5s. shares at 8s. 3d. were both firmer and Birmingham Wagon shares strengthened from 15s. 3d. to 15s. 7½d.

Ruston & Hornsby, after the rise caused by the good impression created by the past year's profits, have come back to 26s. under the influence of the chairman's warning of the more difficult conditions in the current year reflected in some reduction in the order book and of the increased competition, particularly from Germany. British Oxygen shares strengthened at 35s. and British Aluminium were firmer at 45s. while British Timken changed hands around 46s. Ransomes & Marles 5s. shares were 11s. 4½d. and Vokes 4s. shares 15s.

Westinghouse Brake remained at the lower level of 38s. 6d. recorded a week ago, but elsewhere, Metal Industries kept under the influence of the results and at 34s. 3d. compared with 33s. 1½d. Pressed Steel 5s. shares strengthened from 15s. 4½d. to 15s. 7½d., Dowty Group 10s. shares reacted slightly from 32s. 6d. to 32s., but there was renewed demand for T. W. Ward, which rose from 77s. 3d. to 79s. Associated Electrical strengthened from 49s. 9d. to 50s., and English Electric rose from 52s. 9d. a week ago to 53s. 6d., while General Electric kept at 32s. 9d. and Crompton Parkinson 5s. shares at 10s. 4½d.

Forthcoming Meetings

July 19 (Sat.).—Permanent Way Institution, London Section. Visit to H.M. Dockyard, Chatham.

July 26 (Sat.).—Permanent Way Institution, Manchester & Liverpool Section, in the Ambulance Rooms, Nantwich Road, Crewe, at 2.30 p.m. Talk on "The Manchester-Crewe Modernisation," by Mr. T. Mylroi.

August 20 (Wed.) to August 30 (Sat.).—Model Engineer Exhibition at the New Horticultural Hall, Westminster, S.W.1.

